Insider Trading in Mergers and Acquisitions in U.K., U.S., and China

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Abstract

This thesis focuses on the the study of insider trading based on three main economic regions- the U.K, the U.S and China. This is a key aspect of corporate governance and one where the regulatory systems differ substantially in the three countries analysed. Four filters have been developed in helping the regulatory authority detect the existence of insider trading. The first filter is to analyse the Average Abnormal Return (AR) and the Cumulative Average Abnormal Return (CAAR). If there are no unusual price movements prior to the announcement date, one would expect both the AR and CAAR to fluctuate randomly about zero. However, if there is leakage of, and trading on, inside information just prior to the announcement date, this should show up in the form of positive daily average residuals as t approaches 0 and a corresponding build up in CAAR. Dummy variables are also included in the first filter. This filter captures unusual stock price run-ups on a series of days but may miss the ones on single days. As a result, more filters are developed. The second filter is the news search. Hirshleifer (1971) and Fama and Laffer (1971) found that those who possess privileged information have an inventive to take market positions on the basis of their information and then announce their information publicly. I consider two situations in this thesis-firstly, the public news released before the problematic day and secondly, the public news released after the problematic day. The investigation of outliers is used as the third filter in this thesis. The residuals which are 3.5 or 4 times greater than the standard deviation are considered as the outliers. I developed my fourth filter of detecting insider trading based on the Abnormal Turnover (AT). Apart from the four-filter approach, a day 0 AR hypothesis is also developed as a main contribution of this thesis. The day 0 abnormal return hypothesis suggests that on day 0, the day the merger is announced, there will be a substantial abnormal return for the targets due to the substantial trade volume in the stock market. But with the existence of insider dealing, the abnormal return may be partially absorbed prior to the announcement date and as a result, on day 0, the abnormal return will be expected to be lower than in the normal situation. In other words, the firms which are suspected of insider dealing activities may have a comparatively lower average abnormal return on day 0 than the firms which are not. In the conclusion we examine the implications for both corporate governance and also the regulatory regime. We do indeed find

widespread evidence for insider trading and this is a matter of concern-After utilizing the three data samples of the U.K, the U.S and China, we can be fairly confident that relatively few of the clean firms will be anything other than clean. Not all of the suspected firms will be ‘guilty of insider trading’, but there is substantial reason to suppose that they should be examined in further detail to identify the nature of the trading which occurred.

Abbreviations

M&A	Mergers and Acquisitions
FSA	Financial Services Authority
SEC	Securities and Exchange Commission
AR	average abnormal return
CAAR	Cumulative average abnormal return
AT	abnormal turnover
CEO	Chief Executive Officer
TBTF	too big to fail
SAR	The Rules Governing Substantial Acquisition of Shares
SCSC	Sub-committee on Standards and Conformance
CSRC	China Securities Regulatory Commission
NPC	National People's Congress
EMH	efficient market hypothesis
NYSE	New York Security Exchange
NASDAQ	National Association of Securities Dealers Automated Quotations
CAPM	Capital Asset Pricing Model
MV	market value
MTBV	market-to-book value
P/E	price-earning ratio

Chapter 1 Introduction

Mergers and acquisitions (M&A) are undertaken by companies to achieve certain strategic and financial objectives. Many companies take M&A as a means of corporate expansion and growth. From time to time, companies have preferred the external means of growth through acquisitions to internal growth.

The terms 'merger', 'acquisition' and 'takeover' are the three usual parlances in M&A while there are still some differences between them. In a merger, the common objectives bring corporations together sharing their resources. The shareholders of the combining corporations often remain as joint owners of the combined entity. An acquisition resembles more of an arm's-length deal. When the acquiring firm has purchased the assets or shares of the target firm, the acquired firm's shareholders would cease to be owners of that firm. In a merger a new entity may be formed subsuming the merging firms, whereas in an acquisition the acquired firm becomes the subsidiary of the acquirer (Sudarsanam, 1995). A 'takeover' is similar to an acquisition and also implies that the acquirer is much larger than the acquired.

According to the efficient market hypothesis, only the strong form of market efficiency means that all information, no matter public or private can be reflected by the market. However, the strong form of market efficiency is highly theoretical. In this context, the possession of inside information means the potential to make large profits from a firm's stock. Insider trading[1], also known as insider dealing, is the trading of a corporation's stock or other securities such as bonds or stock options by insiders who have potential access to non-public information about the company. Nowadays, insider trading comes more and more frequently into people's lives. For example, according to a recent BBC news on 23 July 2012, six people have been convicted of insider dealing in a case brought by the Financial Services Authority (FSA). It is reported that they obtained information from the London printers of Swiss

[1] The terminology 'insider trading' used in this thesis refers to illegal insider trading unless otherwise stated.

bank UBS and UK brokerage JP Morgan Cazenove on takeovers by firms such as Reuters. They then use the confidential data to place spread bets which generated £732,000 between 2006 and 2008[2].

In Agrawal and Nasser (2009), one of the principal findings is that target stock goes up dramatically, on average by about 30%, upon takeover announcement. The substantial and almost instantaneous increase in stock price provides a tempting trading opportunity to corporate insiders, who often have knowledge of takeover negotiations months in advance of its public announcement. Anecdotal evidence suggests that a great deal of insider trading takes place before takeover announcements. For example, in August 2006, the New York Times reported that securities of over 40% of the companies receiving buyout bids exhibited suspicious trading in the weeks before the deals became public (see Morgenson, 2006). Consequently, takeovers have been a major focus of regulatory efforts against insider trading. For instance, of the two biggest insider trading cases ever prosecuted in the U.S., almost all of the charges in the Levine-Boesky-Milken case in the late 1980s and many of the charges in the Galleon hedge fund case in 2009, relate to insider trading in takeovers (see, e.g., Frantz, 1987; Strasburg and Bray, 2009; Sharma and Pulliam, 2009 and Bray, 2010). Furthermore, about 80% of the cases in Meulbroek's (1992, p. 1669) sample of insider trading cases prosecuted by the U.S. Securities and Exchange Commission (SEC) during 1980-1989 are takeover-related (Agrawal and Nasser, 2009).

Among economists, however, there are still debates on insider trading. It is argued that unrestricted insider trading will lead to a breakdown of capital markets which are unable to perform their role efficiently. This argument states that insider trading works to the disadvantage of outsiders who would then exit the marketplace, taking their capital with them. But for those who are in favour of allowing insider trading, it can lead to more informative security prices (Agarwal and Singh, 2006) and it increases the informational efficiency of markets by contributing to the existing information set held by investors (Ross (1978); John and Mishra (1990); John and

[2] http://www.bbc.co.uk/news/business-18958613

Lang (1991); Zhang (2001) and Chau and Vayanos (2008)). With the above as a backdrop, the aim of this thesis is to empirically investigate the possible existence of insider trading prior to and after merger announcements in the U.K, U.S and China and to develop a feasible methodology in helping the regulators and the policy-makers. The study examines the impact of inside information on trading in advance of planned merger announcements by focusing on the daily stock price movements of both target and bidder firms prior to the first public announcement of their proposed mergers.

Section 1.1 Objective of the thesis

The first objective of this thesis is to examine the impact of inside information prior to the planned merger announcements and to investigate the possibility of the insider trading in U.K, U.S and China from 2006 to 2010. The second objective of this thesis is to develop a series of filters which can help detect the existence of insider trading. Measuring the prevalence of insider trading is of interest to policy-makers and regulators who are highly concerned with the effectiveness of existing insider trading regulations. Because of the financial crisis in 2008 after which the regulation of insider trading becomes tougher, this thesis also aims to provide new methods for the policy makers and regulators to regulate insider trading.

Section 1.2 Outline of the thesis

This thesis is organized as follows. Chapter 2 is the literature review and is divided into two main parts: (i) the M&As, and (ii) the insider trading part. The M&As section in chapter 2 discusses the possible motivation for firms to undertake M&As. In the first part of this section, the neoclassical profit maximisation model, the "hubris" hypothesis and synergy are discussed. In the managerial motives part, the M&A motives are divided into the self-fulfilment motive and the self-protection motive and both of these motives are explained in detail. In the second section of chapter 2, namely the insider trading one, the definition of, as well as the regulations of, insider trading in three countries-U.K, U.S and China are presented respectively. Apart from this, the agency theory and the signalling theory are also discussed followed by the

market efficiency theory. Finally, summaries of the previous studies of insider trading before merger announcement are shown in tables, and discussed in detail.

Chapter 3 gives the methodology and the models. In this chapter, the method applied in this study is given which is the event study approach. The methods of calculating the average abnormal return (AR) and the Cumulative average abnormal return (CAAR) are also given. Apart from the method, the most commonly used models in evaluating returns are discussed in detail. The models include the market model, the market-adjusted model, the CAPM and the FF (Fama-French) three factors model. In applying all the models, the market model and the market-adjusted models are chosen as the most appropriate two in this study. Furthermore, the modified market model with significant lagged market return as an explanatory variable is also used for the consideration of inertia. The CAPM is not used in this thesis because it includes the error term squared as an explanatory variable. As we discuss later, if there are positive outliers, then the error term will be positive and large and its square very large which will therefore affect the identification of the positive outliers.

Chapter 4 gives the four filter approach which is a major contribution of this thesis. Firstly, the rationale of the models applied in this thesis is explained. In addition, the four filters of investigating insider trading are presented one after another in detail. The four filters are the dummy variable approach, the news search, the investigation of outliers and the analysis of the abnormal turnover (AT). After the discussion of the four filters, the day 0 hypothesis is also explained as a verification of the filters being effective.

Chapter 5 gives the data analysis and empirical results for the U.K. Firstly, the sample and data collection are given. Secondly, the four filters discussed in Chapter 3 are applied with the U.K data. Furthermore, A Granger causality test is then applied aiming to find out if there is causality between the targets and the bidders. Lastly, the conclusions of the U.K analysis are given.

Chapter 6 gives the data analysis and empirical results for the U.S. The organization is similar with that in Chapter 5. The major difference is that in this chapter, a comparison of the results from U.K and U.S data is given. This supports other

scholars' conclusions on the difference between the U.K and U.S regulations on insider trading. The conclusions come as the last part in this chapter.

Chapter 7 is the data analysis and empirical results of China. The organization is also similar with that in Chapter 5. Because of the imperfection of the database, only a small number of Chinese listed firms are collected. The major difference is that the news search is not included in this chapter due to the imperfection of the database as well as the confidential reasons. The conclusions of the Chinese analysis are given at the end of this chapter.

Finally Chapter 8 is the conclusion and discussion of policy implications. In this chapter, a brief summary of the four filters is given as well as a comparison of the results from this work with those from the previous ones. The results from this study are consistent with those from the previous works. The thesis also suggests that the four filters approach can be applied in helping the regulators and policy-makers.

Chapter 2 Literature Review

Section 2.1 Introduction

Merger activity around the world has increased dramatically in recent years. The numbers of announced M&A increase from less than 5,000 in 1985 to 40,000 in 2012 globally and the value of transactions has increased from less than 500 billion US dollars in 1985 to about 2,500 billion US dollars in 2012 worldwide. Furthermore, the value of transactions reached about 4,000 billion US dollars in 1999 and then peaked at roughly 5,000 billion US dollars in 2007.[3] And with mergers running at this pace, many national regulators such as the SEC in the U.S and its counterparts abroad are getting tougher on insider trading, since high takeover activity generally spawns bouts of insider trading, or at least rumours of such.

The first section of this chapter is the M&As. In this section, the motives for mergers are discussed. The reason why these motives are so stressed is because the motives of getting involved in insider trading can be explained at least partly by the motives of M&As. For example, in the managerial motives, the managers can achieve both physical and psychological fulfilment through mergers, -and one possible way is to trade on inside information to make substantial profit. The second section of this chapter is the insider trading part. In this section, the issues about insider trading are discussed. These issues include the definition, the regulation, the agency theory, the signalling theory and market efficiency theory. Moreover, two tables are given to show the insider trading performance and the former studies concerning insider trading before the M&A's announcement.

Section 2.2 Merger's Motives

"Mergers and acquisitions represent massive change in the ownership and control of resources. Not surprisingly, the causes and effects of M&A have been subjects of intense interest."(Kiymaz and Barker, 2008, p1) However, the way of categorizing

[3] Source: IMAA(Institute of Mergers, Acquisitions and Alliances) Statistics http://www.imaa-institute.org/images/figure_announced%20mergers%20&%20acquisitions%20(worldwide).jpg

the motives are various. Normally, acquisition motives may be defined in terms of the acquirer's corporate and business strategy objectives. For instance, a large, worldly known vehicle company with well-established distribution network may acquire a small, less famous target so as to achieve marketing and distribution synergies. Other motives could be the desire for increased market power, the consolidation of excess production capacity, control of a supplier so on and so forth. Although the merger's motives are diversified, they can be categorized into two main parts- the maximization of the shareholder's profit and the managerial perspective. The managerial perspective can also be explained as the motives of doing insider trading and meanwhile, the substantial potential profit which can be gained through insider trading leads to 'bad' merger.

"Strategies are formulated and acquisition decisions are made by the managers of the acquiring firm. Managers may be taking these decisions to further the interest of the owners of the firm, i.e. the shareholders." (Sudarsanam, 1995) Neoclassical theory [represented by Manne (1965)] views corporate acquisitions as value-enhancing activities in which managers work to maximize shareholder wealth. In the neoclassical profit maximisation model, the interest of the shareholders is paramount and the managerial interests are subordinated. To put it another way, in case the interest of the former conflicts the latter, managerial interests may give place to the former. The interest of the shareholders dominates that of the managers.

In contrast, managerial theories represented by Mueller (1969) conclude takeovers are an extension of managers' own personal interests, undertaken for the purpose of increasing their own wealth or prestige by managing a large post-merger entity (Franks and Harris, 1989). In the managerialism concept, the managers have considerable power and discretion to pursue their own interest, at the cost of the shareholders'. In other words, in the managerial motive perspective, mergers driven by managerial self-interest may be carried out with wealth losses for shareholders.

Section 2.2.1 Maximization of shareholder's wealth

Neoclassical profit maximization model

The concept of maximising the profit of shareholders as an M&A motive is suggested by traditional economists, especially those of a neoclassical persuasion. The maximization of profit involves an appreciation of competitive strategies which entails M&A in the search for efficiency gains or synergies, market power, or to combat problems of excess capacity in mature or declining industries. (Peck and Temple, 2002; Halpern, 1983, p. 314; Bethel and Liebeskind, 1993, p. 29)

In the neoclassical profit maximization model, the merger's motive is to maximise the wealth of the shareholders. "This means that the incremental cash flows from the decision, when discounted at the appropriate discount rate, should yield zero or positive net present value." (Sudarsanam, 1995) The discount rate is the risk-adjusted rate with a market-determined risk premium.

Table 2.1: The maximizing of the shareholders' wealth definitions:

Added value from acquisition	=	Value of acquirer and the acquired after acquisition	-	Their aggregate value before
Increase in acquirer share value	=	Added value	-	Cost of acquisition
Cost of acquisition	=	Acquisition transaction cost	+	Acquisition premium

Source: Sudarsanam, 1995

The above table illustrates how and when the target of maximizing the shareholders' wealth is achieved, i.e., when the added value of the acquisition exceeds the cost.

Acquisition transaction cost is the cost incurred when an acquisition is made, in the form of regulator's fees, stock exchange fees, cost of underwriting management time and so on. The acquisition premium, which is also called control premium, is the excess of the offer price paid to the target over the target's pre-bid price. Where managers seek to enhance shareholder wealth, they must not only add value, but also

ensure that the cost of the acquisition does not exceed that value. Value creation could come from the target only or come from synergies between both the acquirer and the acquired firm. Since the cost of acquisition has two aspects, namely the acquisition transaction cost and the acquisition premium, it is feasible to reduce either or both of them to reduce the cost of acquisition. One of the ways of merger cost saving is to avoid falling into problems caused by the "hubris" hypothesis.

"Hubris" Hypothesis

The "hubris" hypothesis suggests: "decision makers in acquiring firms pay too much for their targets due to 'hubris', which means they over-estimate their ability and/or make mistakes in evaluating potential targets. …the 'hubris' hypothesis implies: (1) the added value of the target and bidding firms could be zero or negative; (2) the value of the bidding firm should decrease; (3) the value of the target should increase." (Roll, 1986)

The "Hubris" hypothesis describes a situation which is against the neoclassical profit maximisation model. In the M&A market, the bidding firm identifies a potential target firm and makes a "valuation" of the equity of the target firm. Only when the "valuation" exceeds the cost of taking over the target firm, is an M&A offer made, otherwise there is no offer. Critical for the neoclassical approach is that this valuation is correct. However, there is the possibility that no potential synergies exist but some bidding firms believe that such gains exist. In short, "Hubris" hypotheses are often associated with negative wealth effects for bidder shareholders in the M&A.

Section 2.2.2 Managerial motives

The problem of managerial power and discretion when ownership and management are separated has been analysed as an "agency problem" because "The relationship between shareholders and managers may be viewed as one between a principal and his or her agent." (Sudarsanam, 1995) In this agency model, managers as agents may not always act in the best interest of the principal. Instead, they act regardless of their

principal's interest in order to promote their own self-interest and such self-interest pursuit may result in bad acquisitions and loss of shareholder value. (e.g. Taffler and Holl, 2006; Holl and Kyriazis, 1997; Mahoney and Mahoney, 1991; Mahoney and Mahoney, 2006; Firth, 1991; Amit, Livnat and Zarowin, 1989). Here one question may be raised, since the firm is owned by the shareholders, would they allow the managers to do harm to their benefit? Nonetheless, due to the asymmetrical information problem, the shareholders cannot have full information on the agents and this enables managerial utility driven activity being relevant in M&As.

The reasons for managers to carry out mergers are briefly two. They are not mutually exclusive but reinforcing each other:

Self-fulfilment motive

Physical self-fulfilment.

The first type of motive, namely the desire for physical fulfilment is the most natural one. It is highly related to the original desire of human beings. When the firm size increases, tangible benefits are gained by the managers. For example, they can have bigger offices, more luxurious cars, and higher perquisites. Managers may pursue growth if their compensation is a function of sales growth even when there is no corresponding increase in shareholder's wealth. (Jensen, 1986)

Psychological self-fulfilment

The second type mentioned above is the psychological self-fulfilment motive. An industry, sometimes, is more than an industry; it is also a stage for the young managers to act. As a result, managers have the psychological need to deploy their currently underused managerial talents and skills. Moreover, managers may derive intangible benefits such as power and social status when they run large firms.

Self-protection motives

Risk diversification.

Amihud and Lev (1981) using the agency cost model have shown the plausibility of this motive for managers who are striving to decrease their "employment risk." The research results show two aspects. Firstly, manager-controlled firms engage in more conglomerate acquisitions than owner-controlled firms. Secondly, regardless of the means by which a firm achieves diversification, the operations of manager-controlled firms are more diversified than those of owner-controlled firms. Comparing with the owners, managers are more exposed to risks with respect to the firm's earnings, even when both have identical wealth and utility functions. This is because managers are often overinvested in their own firms. This overinvestment arises from three sources. Firstly, they depend on their firms for their income in the form of salaries and bonuses. Apart from this, they may have developed firm-specific human capital which outside their present firm may not be valued as highly. Finally, where they receive compensation in the form of stock options, they increase their investment in their own firms. (Sudarsanam, 1995; Amihud and Lev, 1981; Terry, Callan and Sartoti, 1996)

It may be argued that owners, holding a large share of a firm's equity, may also benefit from a reduction in the risk of financial distress and bankruptcy through corporate diversification. However, the more stable cash flows of the combined firm resulting from a diversifying merger may strengthen the security available to the debt holders of the firm. Thus the debt holders, rather than shareholders, may be the beneficiaries of risk reduction. Therefore, managers seek for an efficient way to diversify the risks they are confronted with and, M&A is one of the ways because "Risk diversification may be achieved when the acquiring and the acquired firm's cash flows are not highly positively correlated, thereby reducing the overall variability of the combined entity's cash flows." (Sudarsanam, 1995)

Avoiding being taken over or being bankrupt.

According to Sudarsanam (1995), in order to get their careers secured, the managers, especially the target managers often go to extraordinary lengths to defeat hostile

takeover bids to achieve immunity. However, quite often as well, their decisions of being involved in M&A are proved to be wrong.

This motive is very common among banking firms. As recent experience shows, banks that grow very large are eventually viewed as TBTF (too big to fail) or 'too big to discipline adequately' and may have the opportunity to exploit safety net subsidies (Kane, 2000; Stern and Feldman, 2004; Mishkin, 2006). Shull and Hanweck (2001) also argued that the 10 largest U.S. banks enjoyed advantages of TBTF implicit guarantees, because they paid less for funds than did smaller banks and operated with lower capitalization rates.

Section 2.2.3 Insider trading as a motive for M&A

Insider trading is not, when judged by the literature focusing on the motives of the M&As, considered as a potential motive. Instead, the M&A motives are categorized into the groups discussed previously. However, anecdotal evidence suggests that a great deal of insider trading takes place before takeover announcements. For example, in August 2006, the New York Times reported that securities of over 40% of the companies receiving buyout bids exhibited suspicious trading in the weeks before the deals became public (see Morgenson, 2006). Morever, of the two biggest insider trading cases ever prosecuted in the U.S., almost all of the charges in the Levine-Boesky-Milken case in the late 1980s and many of the charges in the Galleon hedge fund case in 2009, relate to insider trading in takeovers (see, e.g., Frantz, 1987; Strasburg and Bray, 2009; Sharma and Pulliam, 2009 and Bray, 2010). Apart from the above facts, about 80% of the cases in Meulbroek's (1992, p. 1669) sample of insider trading cases prosecuted by the U.S. Securities and Exchange Commission (SEC) during 1980-1989 are takeover-related (Agrawal and Nasser, 2009). As a result, the possibility of gaining a substantial profit from insider trading before the merger announcement should not be neglected to be considered as a motive for M&A.

Section 2.3 Insider Trading

Insider trading has been a particular interest to society in the past decades because of series of schemes that have netted insiders millions of profit (Doffou, 2003). For preventing the market manipulation and market abuse, trading based on monopolistic information to generate abnormal returns is stipulated as illegal. However, unlike other illegal activities, insider trading remains, at least among economists and legal scholars, one of the most controversial economic transactions. In this section, firstly, the definition is given followed by the regulation, the agency theory, the signalling theory, the market efficiency and other scholars' researches.

Section 2.3.1 Definition of Insider trading

Insider trading, also known as insider dealing, is the trading of a corporation's stock or other securities such as bonds or stock options by insiders who have potential access to non-public information about the company. Corporate officers, directors and large stockholders are commonly called insiders. Moreover, any employee who, in the course of his or her employment, acquires material, non-public information about a publicly traded corporation is also considered as an insider. In addition, outsiders can be temporary insiders in the case that they are given information in confidence solely for a corporate purpose. Attorneys, investment bankers, financial printers and so on are examples of temporary insiders who may be involved in insider trading.

Section 2.3.2 Insider Trading and Regulation

Information is not equally accessible to everyone. Corporate insiders may have extra access to non-public information and they may take advantage of this information to make profits or to avoid a loss. For example, the purchase by a director of shares of his or her firm's stock just before the release of surprisingly good earnings information, and because of his/her status he/she can get the inside information. A common type of insider trading involves trading on knowledge of potential M&As. However, because of the public perception of the immorality and corrupt nature of the practice, insider trading was criminalized in 1934 by the Congress and insider trading

in the United States has been regulated by the SEC since that time. The United States is also by far the earliest country to adopt insider trading laws. Rule 10b-5 of the Security Exchange Act of 1934 regulates trading by insiders and requires trading by corporate officers, directors, and substantial owners to be reported to the SEC. Beginning in the early 1980s, the regulatory authorities in the U.S. began to pursue insider traders. Major regulatory actions include: (1) the promulgation of Rule 14e-3, aimed at those trading on information related to impending tender offer announcements; (2) the passage of the Insider Trading Sanctions Act of 1984; (3) the 1988 passage of the Insider Trading and Securities Fraud Enforcement Act.

In the U.K, bids and related transactions are regulated by a combination of non-statutory and statutory provisions. The main control is 'The City Code on Takeovers and Mergers' (The City Code) which is included by 'The City Panel on Takeover and Mergers' (The Panel). The principal aim of the City Code is to ensure fair and equal treatment of all shareholders in relation to bids and provides an orderly framework within which bids are conducted. However, stake-building is not regulated by the City Code. Instead, stake-building is regulated by 'The Rules Governing Substantial Acquisition of Shares' (SARs), a non- statutory regulation issued by The Panel, and The Companies Act 1985 (Section 198) (Holland and Hodgkinson, 1994). The relevant laws are the Criminal Justice Act 1993 Part V Schedule 1 and the Financial Services and Markets Act 2000, which defines an offence of Market Abuse.

In addition to country-level regulation on insider trading, firms also have policies and restrictions on trading by their company employees in order to reduce litigation risks. Bettis et al. (2000) find that 92% of their sample firms have policies that restrict the trading by their insiders. Apart from this, 78% of firms have explicit blackout periods[4] during which trading is prohibited. In countries such as the Netherlands and the U.K., blackout periods are imposed at the country-level rather than the firm-level (Kabir and Vermaelen, 1996; Hillier and Marshall, 2002b).

[4] In regard to finance, a blackout period marks a time when investors are unable to alter their investment plans. Companies often schedule blackout periods on a regular basis, such as quarterly or semi-annually; these periods can last anywhere from three to 60 days. (Source: http://invmetals.com/i/pdf/insider_trading_blackout.pdf)

The essential difference between the U.S and the U.K is that the U.S only bars trading when it is based on confidential information that is being 'misappropriated', that is stolen or misused, while the U.K ban is broader, involving market-moving inside information (Masters, 2009). As a result, the U.K definition is argued to be superior in form to that defined by the U.S law (Tridimas, 1991; Watson, 1995). Apart from this, another difference between the U.S and the U.K is the period within which trading by insiders must be reported. The U.K Code requires much faster reporting of director's dealings. The directors must inform their company of the transaction as soon as possible and no later than the fifth business day after a transaction for their own account or on behalf of their spouses and children (Hillier and Marshall, 2002). In the U.S., insiders only have to report their holdings within the first ten days of the month following the month of the trade (Persons, 1997).

In China, in 1990 and 1991, two stock exchanges in Shanghai and Shenzhen came into being in succession and two years later, in October 1992, two national regulatory bodies, the Sub-committee on Standards and Conformance (SCSC) and the China Securities Regulatory Commission (CSRC) were established to perform regulatory functions. Before the establishment of the SCSC and the CSRC, the local government of Shanghai and Shenzhen were authorized to administer the stock exchanges respectively (Huang, 2006). Both local governments promulgated a series of regulations for the stock markets. In relation to insider trading regulation there were Articles 39, 39, 40 of the Measures for Regulating Securities Trading in Shanghai (1990) and Article 43 of the Provisional Measures for Regulating Securities Issuance and Trading in Shenzhen (1991). Moreover, insider trading provisions can also be found in Articles 93, 103 of the Provisional Measures for Regulating Listed Companies in Shenzhen (1992). However, these local regulations were argued to be ineffective. In response, a string of important regulations regarding the stock market were promulgated in quick succession in 1993, after the 1993 bull market in which widespread fraudulent misconduct was witnessed (Huang, 2006). In October 1997, the NPC (National People's Congress) revised the Criminal Law of the People's Republic of China to include insider trading. Since then, insider trading has been able to attract potential criminal liability in China (Huang, 2006).

Since the 1990s, countries worldwide have put into practice regulations against trading based on private information, from what it seems a consensus within the regulatory bodies that insider trading should be banned. The decade of the 1990s has indeed witnessed an explosion in the number of nations adopting laws prohibiting insider trading. Bhattacharya and Daouk (2002) find that in 103 countries they surveyed, only 34 had laws in place before 1990 of which only 9 countries enforced those laws. These figures increase rapidly during the 1990s to 87 and 38 in 1998, respectively. However, not all countries have followed the U.S example, and the debate continues: some countries without regulation are now considering it, whereas in academic circles, the benefits of regulating insider trading are still being contested. (e.g., Manne, 1966; Carlton and Fischel, 1983; Easterbrook, 1985; Glosten, 1988; Bajeux and Rochet, 1989; Manove, 1989) The arguments against insider trading can be classified into three parts: (1) insider trading is unfair, people with confidential information are more likely to be able to avoid failures in the market (Akerlof, 1970); (2) insider trading violates certain property rights (Wergane, 1991); (3) insider trading undermines the information's usefulness to the market (Cho and Shaub, 1991). For these reasons, it is argued that regulation is necessary. In addition, we have suggested that the potential for insider trading distorts incentives with respect to engaging in M&A activity.

The focus of regulation is the use and nature of price sensitive information. However, generally, it is the nature of economic activity that traders seek out 'special' information. Even in an efficient market, the traders do so to minimize their forecast errors and justify dealing with specialist market makers (Jaffe, 1974a). Moreover, Grossman and Stiglitz (1980) also find that because the insiders have to seek out 'special' information, search and data processing costs are incurred and these costs in equilibrium just offset the expected gains.

It also has been argued that insider trading might instead be regarded as a desirable activity in capital markets for the following two reasons: (1) managerial incentives, and hence decisions, might improve if insider trading is a possibility (Manne, 1966); and (2) such trading may have a positive impact on the allocational efficiency of securities markets. This latter would result because more information would be reflected in prices, both directly to reflect insiders' own trading activities, and

indirectly when their trading is observed and interpreted by dealers as information signalling (Ross, 1978 and Kripke, 1985).

The regulatory authorities, however, are confronted with many problems, one of which is the wide circle of people, all of whom possess material inside information. J. William Robinson, a principal in Georgeson&Co., which solicits shareholder proxies for companies engaged in takeover battles remarks, "You start with a handful of people, but when you get close to doing something the circle expands pretty quickly. You have to bring in directors, two or three firms of lawyers, investment bankers, public relations people, and financial printers, and everybody's got a secretary. If the deal is a big one, you might need a syndicate of banks to finance it. Every time you let in another person, the chance of a leak increases geometrically." (quoted in Keown and Pinkerton, 1981). It appears that the leakage of inside information actually takes place and is in fact quite common. Seyhun (1992a) also reports that despite the increasingly restrictive regulatory environment, the profitability of insiders' transactions has increased overtime.

Section 2.3.3 Insider Trading and the Agency Theory

Some authors argue that one of the main problems with insider trading is that it inherently goes hand-in-hand with agency problems. Assume that insider trading is not subject to public regulation and the firms are free to make their decisions either to allow or forbid insider trading. Under this circumstance, there will be two types of firms - one to allow insider trading and the other to contractually prohibit it. However, the argument goes, agency problems emerge irrespective of these contractual stipulations.

On one hand, in the firms which allow their insiders to trade from non-public information, insider trading cannot help but create a moral hazard problem. This is because insiders can benefit from both bad news and good news. Therefore, they are indifferent to working to make the firm prosper or working to bankrupt it. They may engage in 'discretionary' behaviour (Levmore, 1982, p. 149; Mendelson, 1969, pp. 489-90; Posner 1977, p. 308; Schotland, 1987, p.1451). The opportunity to gain from

insider trading also may stimulate managers to select risker projects than the shareholders would prefer and this increases the volatility of the firm's stock prices. Because the insiders are comparatively safe: if the risk pays off, they can capture a portion of the gains in insider trading and if the project flops, the shareholders bear the loss (Easterbrook, 1981, p. 312). Insiders can also conceal or disseminate false information in order to profit by buying and selling mispriced securities (Posner, 1977, p.308). Finally, insiders, and particularly, lower-level managers can delay transmitting important corporate information to their superiors in order to trade on it and make a profit (Haft, 1982, p.1051).

On the other hand, firms that contractually prohibit their insiders from trading on inside information are confronted with an adverse selection problem. Because insider trading is difficult to detect, the firms will never know whether their employees can be trusted or not when they claim that they will respect their contract. For the dishonest agents, they will get their salaries and be able to engage in insider trading as well; they will be overcompensated. To avoid overcompensating the dishonest agents, the firm must reduce salaries across the board. But for the honest agents - those who do not trade on inside information-will be underpaid and will leave. Thus, bad agents drive out the good (Easterbrook, 1985, p.94). Consequently, the major problem with insider trading is that, whether shareholders allow their agents or prohibit their agents from using non-public information, they are confronted with agency problems.

Section 2.3.4 Insider Trading and the Signalling Theory

Along with agency theory, signalling theory also has a role to play. Much information pertaining to a firm's value is made publicly available by the firm through announcements, press conferences, and filings with regulatory agencies. However, managers still have important private information that bears on firm value by virtue of their positions within their firms (See Buckley, 1998, p.317-19). This private information may sometimes indicate that firm value is higher than that reflected in the stock price or the managers may know that future cash flows will be less volatile and therefore that the systematic risk of the stock will decline. In order to maximize the shareholders' wealth, the managers will wish to communicate the good news to the

market so as to boost the stock price. However, they could not disclose the news directly due to some competitive or confidential reasons. As a result, the market uses signals. A firm with unfavourable prospects would want to finance with stock, which would bring in new investors to share the losses. In a nutshell, the announcement of a stock offering is generally taken as a signal that the firm's prospects as seen by its management are not bright (Brigham&Houston, 2009). Signals used include earnings announcements, mergers and acquisitions announcements, accounting changes announcements, cash dividend announcements, sell-off announcements, bankruptcy announcements, and securities issuance announcements.

Elliot, Morse and Richardson (1984) investigate insider transactions around several events including annual earnings announcements and find strong evidence that information-related trading occurs around unexpected earnings changes, particularly for small firms. Seyhun (1992a), however, has different findings. In his examination of the changes in the nature of insider transaction during the 1980s, he finds that the tendency for insiders to trade prior to earnings announcements was marginal at the beginning of the period involved, and decreased with the imposition of increasingly severe penalties over time.

Keown and Pinkerton (1981) analyse the market model residuals for a sample of 194 listed and non-listed firms immediately prior to or after the announcement of a takeover bid and find significant positive abnormal returns one month prior to the announcement. Then the abnormal return accelerates in the last five to seven days. A significant increase in the total volume of trading in the shares of the sample firms over the same period is also detected. Keown and Pinkerton then conclude that 'impending merger announcements are poorly held secrets, and trading on this non-public information abounds' (p.866).

Meulbroek (1992) examines the direct effect of insider trading on share prices and his results support the contention that stock price run-ups before takeover announcements reflect widespread insider trading (p. 43). Seyhun (1990a) finds that insiders in bidder firms tended to trade heavily prior to the announcement of a takeover bid. He also finds that in takeover bids with positive (negative) excess returns, insiders tended to purchase (sell) their firm's shares in the months leading up to the announcements.

Seyhun's results support the hypothesis that insiders use their access to non-public information in order to maximize their own profit. Seyhun also suggests that the form of financing employed in a merger provides a signal to the market regarding managerial expectations on the bidder firms' prospects.

Section 2.3.5 Insider Trading and Market Efficiency

The strong form of the efficient market hypothesis (EMH) assumes that securities prices reflect all publicly and privately held information, the weak form of the EMH postulates that securities prices reflect all past trading data and the semi-strong form efficiency maintains that publicly available information is reflected in current market prices.

Garfinkel and Nimalendran (2003) analyse if the type of market may affect the role insider trading has on market efficiency and their finding gives a positive answer. They find that there is less trader anonymity on the NYSE than the NASDAQ based on the impact of insider trading on market maker behaviour. Specialists in the NYSE are able to elicit information regarding trader identity from floor brokers and are more likely to protect themselves on insider trades than non-insider trades. On the other hand, the electronic dealer market of NASDAQ presents a more anonymous atmosphere that leads itself to more passive trader behaviour regarding insider trades (Garfinkel, Jon and Nimalendran, 2003). They conclude that less anonymity and more attention to insider trading on the NYSE suggests that it may be more efficient because it will more quickly adapt to new information (Garfinkel, Jon and Nimalendran, 2003).

According to Rozeff and Zaman (1988), numerous earlier studies have stated that both corporate insiders and outsiders can earn abnormal returns even after correcting for risk differentials and transaction costs (e.g. Jaffe, 1974b; Pratt and DeVere, 1978; Kerr, 1980). Corporate insiders earn abnormal return based on insider transactions and the outsiders earn similar abnormal returns based on the publicly disclosed information required by the SEC. The first belief that the insiders can earn abnormal returns discounts the strong form of market efficiency, which states that the stock

price fully reflects all public and private information. The second belief that the outsiders can earn abnormal returns discounts the semi-strong form of market efficiency which states that stock price fully reflects all publicly available information. If the outside investors mimicking insider trades can earn an abnormal return, the market is not semi-strong efficient. Pratt and DeVere (1978) show that investors who purchase shares following a publicly available buy signal may earn excess returns even after a two-month lag. Their finding shows contrary evidence to the semi-strong form of the EMH. A study done by Jeng, Metrick and Zenghauser (2003) is consistent with Pratt and DeVere (1978)'s. Jeng, Metric and Zenghauser (2003) in their study question market efficiency hypothesis in regards to return. They performed a market efficiency test by analysing the return to the insider instead of the returns to the investor. They find that insider purchases do earn above normal returns of approximately 6% per year, while for insider sales, no evidence of significant above normal returns is detected. This evidence discredits some aspects of the market's efficiency, since insiders are able to make above normal returns on public information (Jeng, Metrick and Zenghauser, 2003). However, Rozeff and Zaman (1988) show opposite evidence. They attribute the anomaly in the argument that outsiders can also use publicly available information for excess returns to miscalculation of return due to size and P/E ratio effects. Using their adjusted abnormal return measures, they found that the profits of outsiders essentially disappear and that the profits of insiders still exist, but insubstantially. This finding upholds that the market is semi-strong efficient and no one can receive abnormal returns on a routine basis due to insider trading. Seyhun (1986) also shows that only insiders can predict abnormal future stock price changes using their superior information. According to Seyhun, markets are efficient and outsiders cannot use publicly available information about insiders' transactions to earn abnormal profits, net of bid-ask spread plus the commission fee. Benesh and Pari (1987) report that 'while the stocks listed in the newsletter displayed positive abnormal returns in the months preceding the listing, there is only weak evidence of abnormal returns to non-insiders who buy shares in response to open market purchases by insiders.'

A study by Fishman and Hagerty (1992) on insider trading regulation supports regulation over the efficient-market hypothesis. While some argue that insider trading leads to more efficient stock prices, Fishman and Hagerty (1992) instead state that the

opposite may be true. Insider trading has two adverse affects on market competition: firstly, deterring others from gathering information and secondly participating and skewing the distribution of information to reflect one trader. They argue that insider trading lowers the number of informed market participants. Moreover, the advantage of the insider with superior information leads to less competition within the market. As a result, they conclude that insider trading lessens the efficiency of stock price and creates a less informed market overall (Fishman and Hagerty, 1992).

Another study by King, Roell, et al. (1988) focusing on the public policy and regulation concerns of insider trading, states that there are both benefits and costs associated with insider trading. Their study discredits the semi-strong form efficiency hypothesis in the U.S market due to insider gains for long periods of time even after disclosure and considers regulation more important than upholding the efficient market hypothesis. The obvious benefit of insider trading is quicker information dissemination, while costs occur when bidding spreads increase, creating in essence a tax on trading (King, Roell, et al, 1988).

Section 2.3.6 Former Studies in Insider Trading

1. Summary of corporate insider trading performance

Table 2.2 presents a summary of insider trading abnormal performance estimates from early studies in the area. Unless otherwise stated, all studies in this table refer to insider trading in firms listed on NYSE.

Table 2.2 :Summary of insider trading performance

Author/Sample	Buy (the return gained by taking the buy side)	Sell (the return gained by taking the short side)	Definition of buy/sell trades
Pratt and DeVere (1970)/ NYSE	19.5% over 6 months (raw return)	8.4% over 6 months (raw return)	A month with 3 or more buy/sell trades
Finnerty (1974a)/ NYSE	8.61% over 11 months (excess	-4.72% over 11 months (excess	All trades

	return)	return)	
Friederich et al. (2002)/ U.K.	-0.89% from market model -3.08% from market adjusted model	-0.23% from market model 1.26% from market adjusted model	All trades
Hillier and Marshall (2002)/U.K.	-4.62% over the event period	-0.47% over the event period	All trades
Cheuk et al (2005)/HongKong	0.58% over 20 days after trading	-0.41% over 20 days after trading	All trades
Fidrmuc et al. (2006)/U.K.	-1.27% before trading 3.12 after trading	3.07% before trading -0.37% after trading	Large trades (>0.1%)
	-2.01% before trading 1.16% after trading	2.29% before trading -0.26% after trading	All trades
	-2.18% before trading 0.79% after trading	1.84% before trading -0.25% after trading	Small trades (<0.1%)
Cheng et al. (2007)/ S&P500	-0.15% over 100 days after trading	-0.43% over 100 days after trading	Delayed disclosure trades

Source: Clacher, Hillier and Lhaopadchan (2009)

2. Summary of insider trading studies before takeover announcements

Table 2.3 presents a summary of insider trading studies before the takeover announcement.

Table 2.3 :Summary of insider trading studies before takeover announcement	
Author	Main Findings
Keown and Pinkerton (1981)	Information leakage prior to announcement. No insider trading data so can only infer that insiders may be trading in this period
Elliott et al (1984)	No significant relationship between timing of insider trading and information announcements
Gupta and Misra (1988)	No relationship between insider trading and price run-ups prior to takeover announcement
Meulbroek (1992)	Almost one-half of the pre-announcement stock price run-up in takeover targets occurs on insider trading days
Meulbroek and Hart (1997)	Illegal insider trading causes increases in takeover premia
Jabbour et al. (2000)	Abnormal stock price performance at an early stage before the acquisition announcement is due to actual trading by corporate insiders
Madison et al. (2004)	The target bank insiders significantly decrease both share purchases and share sales before merger announcements. These findings suggest the effectiveness of law
Agarwal and Sigh (2006)	Six companies in India in their sample may have involved in conducting insider trading
Agrawal and Nasser (2009)	No evidence that insiders increase their purchases before takeover announcements; instead, they decrease them
King (2009)	Illegal insider trading creates both abnormal returns (ARs) and abnormal turnover (AT) ahead of the announcement

Source: Author's Summary

A major focus of research concerns insider trading activity around merger announcements. Keown and Pinkerton (1981) examined insider trading prior to merger announcements and found significant information leakage in the run-up to the event. Elliot et al (1984) extended the work of Keown and Pinkerton (1981) and found that insiders bought more shares and sold less, twelve months prior to a merger.

Meulbroek and Hart (1997) report that the illegal[5] insider trading has a significant impart on the prices of securities around M&As; however this does not seem to be the case when legal corporate insider trading occurs.

Agarwal and Singh (2006) investigate the merger announcement and insider trading activity in India. In their study, apart from the average abnormal return (AR) and the cumulative average abnormal return (CAAR) approach, the analysis based on volume pattern is also applied. They examine whether the daily average volume[6] calculated for a month (-20 to -1 trading days) prior to merger announcement and two weeks (-10 and -1 trading days) prior to the merger announcement give any signal of presence of any possible insider trading. The methodology applied is to calculate the daily average volume from -60 to -41 trading days prior to the announcement date and treat it as the benchmark in the sense of short term. The daily average volume calculated from -150 to -51 trading days prior to the announcement date is taken as the benchmark for the long term. Then the daily average volume for each firm is compared with these two benchmarks and the percentage of firms showing a higher volume is ascertained. In their study, they have defined as 'significant', if the daily average volume is higher by 100% or more when compared with a particular benchmark. Finally, they found 6 out of 42 firms which are suspected to have been involved in conducting insider trading activity.

A more recent study done by King (2009) examines the price-volume dynamics in a target firm's share ahead of the first public announcement of takeover. He studies 399 Canadian firms from 1985 to 2002 and finds that illegal insider trading creates both abnormal returns (ARs) and abnormal turnover (AT) ahead of the announcement. He also finds that the rise in AT begins far ahead of the actual announcement, accompanied by ARs in the last five trading days. His work confirms the importance of AT for triggering an insider trading investigation (King, 2009). Apart from King

[5] Insider trading is legal once the material information has been made public, at which time the insider has no direct advantage over other investors.

[6] In some scholar's articles, they use the terminology 'abnormal turnover (AT)' which is the same as the abnormal trading volume.

(2009), Jarrell and Poulsen (1989), Conrad and Niden (1993), Chae (2005) and Graham, Koski and Loewenstein (2006) also find that the pre-announcement run-up of the target firm's shares is accompanied by higher than normal trading volume that may lead the price run-up by several weeks or months. Moreover, work by DeMarzo, Fisherman and Hagerty (1998) and Bris (2005) suggests that AT ahead of public news should trigger an insider trading investigation.

Chapter 3 Models and Methodology

Section 3.1 Introduction

The most commonly used approaches to examine the abnormal return of both the target and acquiring firms around the announcement date of M&A are event studies and accounting studies. In this thesis, an event study is used. In this chapter, firstly, the event study approach is introduced, briefly followed by the market model, the market-adjusted model and the CAPM. Then, the Franks and Harris finding is discussed to support that both market model and CAPM can be used in the examination of abnormal returns for target firms in M&A. Also, the French three factor model (the FF model) is discussed as an alternative to the CAPM. In this thesis, the market model, the market-adjusted model and the modified market model are chosen to do the analysis. The CAPM is not used in this thesis because it includes the error term squared as an explanatory variable. If there are positive outliers, then the error term will be positive and large and its square very large which will therefore affect the identification of the positive outliers.

Section 3.2 Event Study Approach

The Structure of Event Study

The common approach to measure shareholder's wealth changes is the abnormal return methodology. This methodology compares the returns to both bidders and targets during a period surrounding the takeover announcement to 'normal' returns which is the core of an event study from a period unaffected by the event. In this thesis, the event is the takeover announcement. The event study approach has been introduced by Fama et al. (1969) and reviewed by Firth (1980), Conn (1985) and Mackinlay (1997). The event study approach has been used in a large variety of studies, including M&As, earnings announcements, debt or equity issues, corporate reorganisations, investment decisions and corporate social responsibility (Mackinlay, 1997; McWilliams& Siegel, 1997).

The initial task of conducting an event study is to define the event of interest and identify an event window-a period over which the event occurs. (In this study, the event window is the period over which the M&As take place). Usually, it is preferred to define the event window to be larger both prior to and after the event period because this permits an examination of the period surrounding the event.

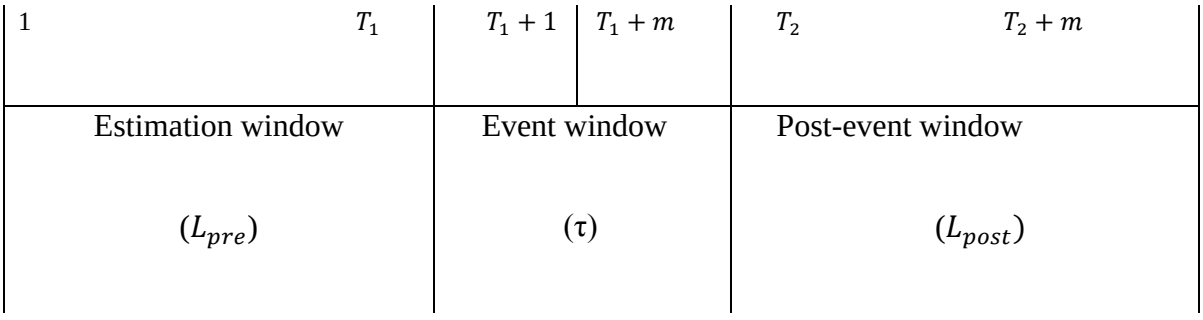
The second task is to measure the 'normal' return which is the core of an event study. The assessment of the 'normal' return is based on the application of a certain pricing model. The abnormal return (ar_{it}) is the actual ex-post return of the security (r_{it}) over the event window minus the 'normal' return of the firm over the event window.

$$ar_{it} = r_{it} - E(r_{it}|X_t) \qquad (3.1)$$

Where $E(r_{it}|X_t)$ is the expected 'normal' return given the conditioning information X for time period t.

To assess the 'normal' returns, the estimation window (L) (The estimation window is a period over which parameters are estimated.) and the event window (τ) need to be defined. Taking the market model as an example, the following figure provides a graphic illustration for the time periods used in the event study.

Figure 3.1: Formal Definition of Event Window



The event window (τ) is often calculated for some time before and after the event in order to control for information leakage (market anticipation) and the possible slow price adjustment. Firth (1979) finds that the market begins to anticipate a merger one month prior to the announcement. It is common to choose a period such as (-5D, +5D), (-10D, +10D) or (-2M, +2M).

where D is days and M is months.
The predicted returns are therefore a proxy for what would be expected to happen in the absence of the event. The basic market model is

$$r_{it} = \alpha + \beta_i r_{mt} + e_{it} \qquad (3.2)$$

with $E(e_{it}) = 0$ and $VAR(e_{it}) = \sigma^2$. This is estimated on the estimation window and then used to predict beyond this window. Thus the differences between the predicted and actual returns are:

$$\hat{e}_{it} = r_{it} - (\hat{\alpha}_i + \hat{\beta}_i r_{mt}) \qquad i = 1, \dots, N \qquad t = T_1 + 1, \dots, T_1 + m \quad (3.3)$$

Averaging these prediction errors across all securities yields what has been termed the 'average abnormal return' for day t:

$$\bar{e}_t = \frac{1}{N}\sum_{i=1}^{N} \hat{e}_{it} \qquad t = T_1 + 1, \dots, T_1 + m \qquad (3.4)$$

Clearly, the equation above is nothing more than a series of average prediction errors, and while the term 'abnormal return' has been readily adopted in the event study literature, it must be stressed that this terminology is problematic (Frankfurter and McGoun, 1993).

Problems arise from uncertainty regarding the event day and also because, even if the event day is known precisely, it is not always clear when the information content of the event, usually associated with its announcement, became available (Coutts, Mills and Roberts, 1997). A common way of overcoming these problems is to compute the 'cumulative average abnormal returns' (Fama et al., 1969). Summing average

abnormal returns for various periods around the event gives the cumulative average abnormal returns.

$$CAAR_t = \bar{e}_t + CAAR_{t-1} \quad (3.5)$$

where t is the event period.

The standard event study is to examine the market reaction to the event in question by testing the significance of the $CAAR_t$ for a specified event period. It can be interpreted as meaning there has been no market reaction to the event if both $CAAR_t$ and $\bar{e}_t$ are to fluctuate stochastically about zero; i.e. that the returns around the event are not abnormal in comparison to those that would have occurred had the event not happened.

The value of this method is indubitable. Although many researchers have challenged traditional approaches on various grounds, empirical evidence in several studies (e.g. Brown and Warner(1980, 1985), Malatesta (1986) and Henderson (1990)) has concluded that the event-study approach is quite robust for detecting abnormal mean returns (Cyree and DeGennaro, 2001).

Section 3.3 Market Model

The basic market model is developed by Markowitz (1952) and Sharpe (1963). The market model stands for the relationship between an individual stock's return and the return on 'the market' (e.g. the FTSE all share index or the S&P 500). The market model is specified as:

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it} \quad (3.2)$$

where, as before, r_{it} and r_{mt} are the returns during t on the company i's stock and on a broad-based stock market index, proxying for 'the market'. α is the intercept and β is the systematic risk. e_{it} is the random error which averages out to zero. The model's parameters, α_i and β_i are estimated by running a regression of r_{it} on r_{mt} over an

appropriate estimation period. The estimated parameters are then used to calculate a predicted normal return C_{it} for each company i and the abnormal return as:

$$ar_{it} = r_{it} - C_{it} \qquad (3.6)$$

$$ar_{it} = r_{it} - \{\hat{\alpha}_i + \hat{\beta}_i r_{mt}\}$$

If the takeover event is expected to create additional value for the shareholders of i company, then the abnormal return will be positive before the merger announcement. It will be zero if the effect of the takeover is neutral and negative if the shareholders suffer loss.

Section 3.3.1 The measurement and statistical analysis of abnormal returns using the Market Model

Fama, Finsher, Jensen and Roll (1969) examine the effect of the announcement of a stock split[7] on stock prices. To capture the effect of the event on stock i, they control for the normal relation between the return on i during month t, r_{it} and the return on a broad stock market index (they use CRSP NYSE Market Portfolio) during month t, r_{mt}. In their study, a sample of monthly return data from 1926 to 1960 including the period containing the event is used. They estimate the parameters using the market model.

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it} \qquad (3.7)$$

In the FFJR (Fama, Fisher, Jensen and Roll) study, the event period is from 29 months before the split is announced to 30 months after. The month of the split is defined as s=0 in event time and the event period then runs from s=-29 to s=30. Redefining time relative to the event month is useful since they examine the average stock price

[7] Division of already issued (outstanding) shares of a firm into a larger number of shares, to make them more affordable and thus improve their marketability while maintaining the current stockholders' proportional ownership of the firm. The aggregate value of the shares remains the same as before the split, but the price (and dividend) per share declines with the split ratio. [http://www.businessdictionary.com/definition/stock-split.html#ixzz2LvKy4J1C]

movement for the sample stocks during specific months around the event month (Binder, 1998).

FFJR use the residual $\hat{e}_{it}$ from the market model for the calendar month corresponding to month s as an estimator of the abnormal return for stock i during event month s. For example, if stock i announced a split during June 1952 this is the event month (s=0) and the estimated abnormal return during s= -6 (six months preceding the split) is the residual for the calendar month December 1951. This method removes the effects of economy wide factors from the return on i's stock, leaving the portion of the return attributable to firm specific information (Binder, 1998).

The estimator of the average abnormal return during month s, ar_s, is defined as

$$ar_s = \sum_{i=1}^{N_s} \frac{ar_{is}}{N_s} \qquad (3.8)$$

Where ar_{is} is the estimator of the abnormal return for stock i and N_s is the number of firms in the sample during month s. The estimates of the average abnormal returns are summed across months to measure the average cumulative effect on the sample securities of company specific information reaching the market from month S_1 to month S_2. That is,

$$CAAR_{S1,S2} = \sum_{S=S_1}^{S_2} ar_S \qquad (3.9)$$

The previous literature assumes that if there are no unusual price movements prior to the announcement date, one would expect both the ar_s and $CAAR_{S1,S2}$ to fluctuate randomly about zero. However, if there is leakage of, and trading on, inside information just prior to the announcement date, this should show up in the form of positive daily average residuals as t approaches 0 and a corresponding build up in $CAAR_{S1,S2}$.

However, this commonly applied method can only give a general idea of the pre-bid performance of the share prices. In other words, it obscures which exact share(s) has caused a certain pattern. As a result, rather than modelling abnormal returns as

prediction errors from the market model equation, the sample period can be extended to contain the event period and (when there is only one event) a zero-one variable D_t can be included in the return equation (Binder, 1998):

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i D_t + e_{it} \quad (3.10)$$

The coefficient γ_i is the abnormal return for security i during period t and is directly estimated in the regression. That is, this approach parameterizes the abnormal returns in the market model regression equation. This method was apparently first used by Izan (1978). She examines a portfolio of firms, all of which experienced the events, i.e., regulatory announcements, during the same calendar periods, by using the equally weighted portfolio return as the dependent variable in the equation:

$$r_{pt} = \alpha_p + \beta_p r_{mt} + \sum_{a=1}^{A} \gamma_{pa} D_{at} + e_{pt} \quad (3.11)$$

Equation (3.11) contains one dummy variable D_{at} for each announcement period a. When an equally weighted portfolio return is used as the dependent variable, $\hat{\gamma}_{pa}$ is the estimator of the average abnormal return across the stocks in the portfolio (Binder, 1998).

Section 3.4 Market-adjusted Model

The market model has some estimation shortcomings such as low-volume (thin) trading and size disparity between sample firms and the market proxy. The market-adjusted model avoids one or the other of these problems the market model suffers from. The market-adjusted model uses the return on the market r_m as the normal return. In other words, the market-adjusted model avoids the necessity of estimating α and β (It sets α = 0 and β = 1 on 3.2). An assumption sufficient for using such a performance measure is that all the firms follow the market strictly. In that case, the expected value of the difference between the return on a security and the return on the

market index should, in an asset pricing model framework, be equal to zero.[8] It can be considered a constrained version of the market model.

The market-adjusted model is presented as follows:

$r_{it} = r_{mt} + e_{it}$ (3.12)

where r_{it}= rate of return on asset i time t

r_{mt}= rate of return on the market index at time t

e_{it}= residual error

Section 3.5 CAPM

The Capital Asset Pricing Model (CAPM) was developed by Markowitz (1959), Sharpe (1964), Lintner (1965b, 1969) and Mossin (1966) and reviewed by Sharp (1991), and Campbell, Lo and Mackinlay (1997). The CAPM is an equilibrium model for 'normal' returns and it is based on six assumptions:

1. No transaction costs or taxes.
2. Investors are price-takers. No individual's buying and selling behaviour is influential enough to affect the price of the stock. The capital market is in perfect competition condition.
3. All investors are assumed to be risk-averse and they make their portfolio decisions relying on expected values and standard deviations of the return on their portfolios.
4. Each investor has access to unlimited short sales and unlimited lending and borrowing at risk-free rate.
5. All investors possess the same information of the distribution of returns among all assets. All investors plan to invest over the same horizon.
6. The market portfolio consists of all publicly traded assets.

[8] For the average difference to be zero, it is not necessary for all sample securities to have β=1. It is required only that the average β be equal to 1 (Brown and Warner/1980).

Given these assumptions, the Sharpe and Lintner version of the CAPM in terms of expectations states that:

$$E(r_{it}) = r_{ft} + \beta_i[E(r_{mt}) - r_{ft}] \quad (3.13)$$

where

$E(r_{it})$ is the expected return of security i at time t, and

$r_{it} = \ln\left[\frac{P_{i,t}+D_{it}}{P_{i,t-1}}\right]$, where $p_{i,t}$ is the price of security i at time t and D_{it} is cash dividend paid per share of firm i at time t.

$E(r_{mt})$ is the expected return on the efficient market portfolio at time t, and

$r_{mt} = \ln[\frac{P_{m,t}}{P_{m,t-1}}]$, where P_m is the price of the market and is adjusted for dividends and capital gains/losses.

r_{ft} is rate of return on risk-free asset

$\beta_i = \frac{COV(c_i,r_m)}{VAR(r_m)}$, which measures the systematic risk between security i and the efficient market portfolio

CAPM says that β_i is the only factor which determines the difference in expected return. Moreover, CAPM describes the linear relationship between the expected return and market return. When β is high, the asset is very sensitive to market movements and therefore is more risky. On the contrary, when β becomes lower, the asset becomes accordingly less sensitive to the market movement.

Section 3.5.1The way of estimating CAPM

Most of the early empirical tests of the CAPM consist of two parts- the use of a time series regression on estimating βs and the use of a cross-sectional regression to test the hypotheses we derived from the CAPM model (Elton and Gruber/1981). A very early empirical study of the CAPM was performed by Lintner(1965b, 1969) and reproduced in Douglas (1968). Lintner first estimated $\beta$for each of the 301 common stocks in his sample. He estimated β by regressing each stock's yearly return against the average return for all stocks in the sample using data from 1954-1963. The process is as follows:

Step1: Estimate the following market model and get α and β individually.

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it} \quad (3.14)$$

Step2: Estimate

$$r_i = \alpha_1 + \alpha_2 \beta_i + \alpha_3 S_i^2 + v_t \quad (3.15)$$

where β_i is collected in the market model for individual companies, S_i^2 is the variance of e_t collected in the market model for each company to reflect the risk and r_i is the stock return of the individual firms. Douglas(1968) employed a similar methodology and found results that were similar to Lintners (Elton and Gruber/1981).

Section 3.5.2 Relationship between the Market Model and the CAPM

The market model and the CAPM have different theoretical motivations. Unlike CAPM, which is an equilibrium model, the market model is not. The basic market model does not make any assumptions about how investors optimize their portfolio. Instead, the market model makes the assumption about the statistical relationship within the market. The CAPM uses the value-weighted market portfolio. The market portfolio is the portfolio of all risky assets which is completely diversified. In practice, a market index is used because 'all risky assets' are not observable (Elton and Gruber/1981).

The CAPM is related to the market model as follows. First, consider the market model regression:

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it} \quad (3.2)$$

Let r_f denote the risk-free rate. Subtract r_f from both sides of the equation above:

$$r_{it} - r_f = \alpha_i - r_f + \beta_i r_{mt} + e_{it} \quad (3.16)$$

Next, add and subtract $\beta_i r_f$ from the right-hand-side:

$$r_{it} - r_f = \alpha_i - r_f(1 - \beta_i) + \beta_i(r_{mt} - r_f) + e_{it}$$
$$= \alpha_i^* + \beta_i(r_{mt} - r_f) + e_{it} \quad (3.17)$$

where $\alpha_i^* = \alpha_i - r_f(1 - \beta_i)$

This re-expressed market model is called the market model in excess return form (or the excess return market model). One of the empirical tests of Sharpe-Lintner CAPM is the hypothesis as follow (Elton and Gruber/1981):

$$H_0: \alpha_i^* = \alpha_i - R_f(1 - \beta_i) = 0$$
$$H_1: \alpha_i^* \neq 0$$

When the null hypothesis H_0 α_i= 0 is not rejected, the excess return market model is equivalent to the CAPM in the Sharpe-Lintner version.

Section 3.5.3 The Drawbacks of CAPM

Despite the existence of a large academic literature which discusses implementation of CAPM, in particular in relation to estimation of the key parameter β, there is no consensus in relation to how a best estimate should be obtained (Blume/1975, Carleton and Lakonishok/1985, Klemkosky/1975 and Reilly and Wright/1988). There is no consensus with respect to the index, time frame, and data frequency that should be used for estimation. Previous researches mainly focused on reasons for differences in estimated β between periods and the ability of historical βs to predict future βs (Blume/1975, Carleton and Lakonishok/1985, Klemkosky/1975 and Reilly and Wright/1988). This lack of consensus manifests itself in different β estimates for the same company. Such differences result in significantly different expected returns (cost of equity) for individual companies leading potentially to conflicting financial decisions, in capital budgeting for example.

Section 3.6 Franks and Harris's finding

Simulations by Brown and Warner (1980) suggest that although infrequent trading will produce some bias in measured parameters in the market model and CAPM based model, the impact on the result is small. In the study done by Franks and Harris

(1989), the company abnormal returns $ar_{it} = r_{it} - C_{it}$ are aggregated to form a portfolio abnormal return AR_t defined as

$$AR_t = \frac{1}{N}\sum_{i=1}^{N} ar_{it} \tag{3.18}$$

where ar_{it} is the individual i firm's abnormal return at time t

N is the number of companies in a particular portfolio.

The statistical significance of AR_t is assessed with the statistic $T_t = AR_t/\sigma$, where σ is the standard error of the AR_t's (assumed to be normally distributed) for a period assumed to be unaffected by the merger. In reported results, σ is calculated for the 60-month period beginning at t=-71 months and ending at t=-11 months. T_t follows Student's distribution with 59 degree of freedom. (Brown and Warner, 1980)

Franks and Harris, however, argue that, the AR accumulation cannot satisfy the situation when companies disappear from the analysis as a result of non-reading, delisting or suspension close to the bid date. As a result, company-specific 'total abnormal return' (TAR_t) is constructed. This is defined as:

$$TAR_t = \frac{1}{N}\sum_{i=1}^{N} tar_{it} = \frac{1}{N}\sum_{i=1}^{N}\sum_{j=t_b}^{t} ar_{ij} \tag{3.19}$$

where the accumulation process begins at time t_b and includes those monthly abnormal returns that are observed up to and including month t, and N is the number of companies in a sample. Apart from the equally weighted TAR shown in the equation above, TAR on a market-value-weighted basis is also calculated. Franks and Harris, then assess the statistical significance of TAR_t using the statistic $TTAR_t = TAR_t/\sigma_{TAR}$, where $\sigma_{TAR} = \sqrt{M}\sigma$ and M is the average (across companies) number of months for which return data are available to form TAR_t. The statistic $TTAR_t$ is approximately standard normal under the assumptions that TAR_t has a zero mean and AR_t are independent. Because of the similar results for targets applying in the market model, the market-adjusted model and CAPM, we can choose either in our study.

Section 3.7 MV and MTBV Adjusted Approaches

The main alternative to CAPM is the three factor model suggested by Fama and French (1992, 1993). They find that the combination of MV (market value) and MTBV (market-to-book value) provides a good explanation of the average return. Usually, MV and MTBV approaches are used in the short run analysis.

Section 3.7.1 Fama-French Three-factor Model

Some previous work establishes that although the CAPM assumes the β coefficient captures all cross-sections of average returns, average returns are related to firm characteristics such as MV (stock price times numbers of shares in issue), the price-earnings ratio (P/E), MTBV (the ratio of market value to book value of common equity), past sales growth, etc. However, these patterns in average returns are not explained by CAPM (Fama and French, 1996).

In an influential paper, Fama and French (1992) study the joint roles of MV, leverage, P/E, MTBV and β in the cross-sectional of average stock returns. They find for the US market in the period 1962-1989 (p.445): '(1). When we allow for variation in beta that is unrelated to MV, there is no reliable relation between beta and average return. (2) The opposite roles of market leverage and book leverage in average returns are captured well by the combination of MV and MTBV. (3) The relation between E/P and average return seems to be absorbed by the combination of MV and MTBV.' Subsequently, Fama and French (1993) develop the Fama French three-factor model (the FF model for convenience). The FF model regresses the post-event monthly excess returns for firm i on the market premium factor, a MV factor and a MTBV factor. Fama and French claim that many of the CAPM average-return anomalies are captured by this model. Moreover, Fama and French (1996) show that the FF model performs well to portfolios formed on the cash-flow/price ratio, P/E, and sales growth. The model is shown as follows:

$$r_{it} - r_{ft} = \alpha_i + \beta_i\left(r_{mt} - r_{ft}\right) + s_i SMB_t + h_i HML_t + e_{it} \qquad t = 1, \dots, t_0 \quad (3.20)$$

where r_{it}= the simple return on the common stock of firm i at time t

r_{ft}= the risk-free rate of return

r_{mt}= the return on a value-weighted market index at time t

SMB_t= the return on a value-weighted portfolio of small stocks minus the return on a value-weighted portfolio of big stocks at time t

HML_t= the return on a value-weighted portfolio of high MTBV stocks minus the return on a value-weighted portfolio of low MTBV stocks at time t

α_i,β_i, s_i and h_i are the regression parameters

e_{it}= residual error

The FF model tends to produce significant coefficients on all three factors, and regression R^2 values are close to 1 for most portfolios in their tests. Portfolios of value stocks[9] tend to have a high value of *h*, while growth portfolios have a negative *h*. Large portfolios tend to load negatively on SMB and small portfolios have a large positive value for *s*.

The FF model has generally two advantages. Firstly, unlike the MV/MTBV-matched model, FF model does not require MV or MTBV data for sample firms and this implies that firms whose MV or MTBV data is unavailable can also be included in the analysis. Secondly, FF model does not require pre-event data. As a result, FF model may sacrifice the advantage if it is used in short-run study because in short-run study, the coefficients of the three factors have to be estimated using a pre-event estimation window (see Barber and Lyon, 1997, p.372, footnote 5), analogous to a conventional market model approach.

[9] Fama and French define value stocks as the stocks which have high ratio of book value to market value.

Chapter 4 The Four-Filter Approach

Section 4.1 Introduction

In this chapter, the rationale of the models used and the four filter approach are both discussed in detail. The models applied in this these are the market model, the market-adjusted model and a modified market model. The reasons are presented in detail later in this chapter. In terms of the four filter approach, the first filter is the dummy variable approach. Daily dummy variables were used to detect the problematic day(s) on which the firms experience positive abnormal return. The second filter is the news search and this is to help rule out the possible deliberately released inside information or the publicly released rumours. The third filter is the detection of the outliers because positive outliers need to be identified. The fourth filter is a study of the abnormal turnover. Through the four filters, the firms are categorized in six groups – the absolute clean, the obscure, the suspected, the ultra-suspected and the ultra-ultra-suspected.

The rationale behind this is that no one filter appears capable of satisfactorily identifying all possible insider trading. For different reasons each filter misses capturing certain aspects of insider trading because of the complicated activities behind such trading. In addition, it may be that focusing on single outliers misses insider trading, because it spreads over adjacent days in order to minimize visibility. This is something the dummy variable approach will capture.

Section 4.2 Rationale of the models used

The models applied in this thesis are the market model, the market-adjusted model and a modified market model. The market model is potentially superior as it controls for the portion of the return that is related to the movement in the market,[10] hence the

[10] Newspaper reports typically report pence per share falls and rises, and sometimes percentages, but rarely attempt to isolate the effect of the particular event being reported from general market movements (Beverley, 2007).

variance of any abnormal returns detected should be reduced (Beverley, 2007). Since the use of the market model generally improves the chances of being able to isolate the effect of specific events, it is this model that has been adopted in the thesis. The market-adjusted model is also applied as another means to examine the results given by the market model. The reason for this is because the market model has some estimation shortcomings such as low volume trading and size disparity between sample firms and the market proxy (also mentioned in Section 3.4). However, the market-adjusted model assumes that α=0 and β=1 which indicates that all of the sample in a research follow the market strictly. In reality, the fact is that some firms would follow the market strictly while others would not. As a result, a test is used to justify that the assumptions made by the market-adjusted model are true. The data used is the target firms in the U.K. 2006. In the test, I run 19 regressions to get the estimated $\hat{\beta}$ and then I use the t-test to find out whether it is significantly different to 1. The results are collected and presented as following:

Table 4.1: The results of the t-test for β=1

Firm number	H_0: $\beta = 1$	P-value for H_1: $\beta \neq 1$
1	fail to reject	0.0000
2	fail to reject	0.0000
3	fail to reject	0.0000
4	fail to reject	0.0000
5	fail to reject	0.0000
6	fail to reject	0.0000
7	fail to reject	0.0000
8	fail to reject	0.0000
9	fail to reject	0.0000
10	fail to reject	0.0000
11	fail to reject	0.0000
12	fail to reject	0.0000
13	fail to reject	0.0000
14	fail to reject	0.0000
15	fail to reject	0.0000
16	fail to reject	0.0000
17	fail to reject	0.0000
18	fail to reject	0.0000
19	fail to reject	0.0000

Source: Author's calculation

As is shown in the table, all the estimated $\hat{\beta}$s are highly significant and equal to 1. Therefore, the assumption made by the market-adjusted model is accepted.

The CAPM is not used in this thesis because of the way it is estimated. As is discussed in Section 3.5, the estimation of CAPM is divided into two parts-firstly with the use of a time series regression and secondly with the use of a cross-sectional regression (Elton and Gruber, 1981). In the cross-sectional regression, the variance of the error term collected in the time series regression for each individual is included as an explanatory variable. Since the error term in the market model is defined as the abnormal return, then if there are positive outliers, the error term will be positive and large and its square very large which will therefore affect the identification of the positive outliers. Apart from the above reasons, neither the CAPM nor the Fama-French Three-factor Model is chosen in this thesis because they tend to be estimated with different shares in the same sample. However, my approach is to do this share by share, because the additional factors they are capturing in the analysis (risk, etc.) are share specific and hence by doing separate regressions, I can explicitly capture these differences.

Section 4.3 The event study approach and the four filters

The seven steps approach in this thesis:

Step1: Model chosen

The models applied in this thesis are the market model, the market-adjusted model and a modified market model. (the first two are mentioned in chapter 3 section 3.3 and 3.4)

Because of the possible inertia in the market model, a lagged explanatory variable is added to account for the partial adjustment. The model is defined as below:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i r_{mt-1} + e_{it} \quad (4.7)$$

where r_{it}= rate of return on asset i time t

r_{mt}= rate of return on the market index at time t

r_{mt-1}= rate of return on the market index at time t-1

e_{it}= residual error

In this thesis, r_{mt-1} is kept in the regression only when it is significant (at the 5% level).

Step2: Event window chosen (mentioned in chapter 3, section 3.2)
In this chapter, I choose a 71 trading day period as the event window. I take the announcement day for each acquisition as the day 0 and collect the stock price for an acquisition firm from the 60th trading day prior to the announcement day to 10th trading day after the announcement day.

Step3: Defining the Estimation Window (when applying the market-adjusted model, this stage is omitted.)

Generally, in an event study using daily data and the market model, the market model parameters could be estimated over 120 trading days prior to the event and the event period itself is not included in the estimation period to prevent the event from influencing the normal performance model parameter estimates (Keown and Pinkerton, 1981). In this chapter, an interval from -61 trading day to -180 trading day before announcement day is chosen as the estimation window.

Table 4.2 The definition of the estimation window and the event window

-180 trading day to -61 trading day	-60 trading day to +10 trading day
Estimation window (L_{pre})	Event window (τ)

Step4: Estimation of α, β and the daily dummy variables (when applying the market-adjusted model, this stage is omitted.) (literatures of the market-adjusted model were mentioned in chapter 3 section 3.3)

The daily return for each acquisition firm is calculated by using the equation below:

$$r_{it} = \frac{p_r - p_{r-1}}{p_{r-1}} \qquad (4.8)$$

where p_r is the stock price in the day r. This forms the left hand side variable in the equation

$$r_{it} = \alpha_i + \beta_i r_{mt} + \theta_i D_{1i} + e_{it}^{11} \qquad \text{i=1, 2, 3.., 14} \qquad (4.9)$$

where D_1 is the interval dummy variable. In this chapter, I divide the daily dummy variables into 14 groups with a 5-day interval (dummy1= day>-60& day<-55, dummy2= day>-55& day<-50...dummy14= day>5 & day<10).

Then, for those firms which have significant (5% significance level) interval dummy variables, I add in daily dummy variables in the certain interval(s) to monitor the exact day on which abnormal return exists. Both significant positive residuals and significant negative residuals are picked out because it might be the case that the insiders deliberately leak negative information to drive the share price down before they intend to buy.

$$r_{it} = \alpha_i + \beta_i r_{mt} + \theta_i D_{2i} + e_{it} \qquad \text{i= -60, -59…, +10} \qquad (4.10)$$

where D_2 is the daily dummy variable.

I use the dummy variables purely to identify outliers and I calculate the errors with no dummies using equation 4.11.

The estimated abnormal return is given by

$$\hat{e}_{it} = r_{it} - (\hat{\alpha}_i + \hat{\beta}_i r_{mt}) \qquad \text{t= -180, -179…, -61} \qquad (4.11)$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the ordinary least squares estimates of α_i and β_i.

Step5: The news search

The publicly released news before the announcement day is another concern in this thesis, for the possibility that the takeover rumours or the news of the director trading

[11] The dummy variable approach is also applied with the market-adjusted model and the modified market model and the results are identical. As a result, only the market model is presented here.

on the shares can influence the stock prices. If the spikes of the clean firms are caused by the publicly released news, then the clean firms should not be re-classified as 'suspected'. However, Hirshleifer (1971) and Fama and Laffer (1971) argued that those who possess privileged information have an incentive to take market positions on the basis of their information and then announce their information publicly. In this sense, the investigation of insider trading would be challenging because isolating trading based on private information is difficult. Moreover, it is difficult to know whether the public released news is truly 'public released news' or is released after the insiders have taken advantage and then released to the public to cover up their insider trading activity. As a result, I categorize the suspected firms with news release less than or equal to five days before the problematic[12] days as 'obscure' and the suspected firms with news release less than or equal to five days after the problematic days as 'obscure with lagged news'. (e.g. If Firm A has a problematic day on -30 and a news release on -35, then Firm A is categorized as 'obscure firm'. If Firm B has a problematic day on -30 and a news release on -25, then Firms B is categorized as 'obscure with lagged news'). The latter represents a possible problem of insider trading accompanied by deliberate information release and the former may or may not represent a problem. In this thesis, the news search is done only for the target firms.

Step6: Detection of the outliers

The detection of outliers is essential in investigating the existence of insider trading. In this analysis we identify those positive residuals which are 3.5 or 4 times greater than the standard deviation. If the positive residuals identified were not 4 times greater than the standard deviation then they would be compared to 3.5 times standard deviation. I use both 3.5 and 4 as an increasingly stringent test of outliers. When one or several outliers are found, the daily dummy variable(s) is included in the regression to find out if the outlier(s) is significant in a regression context:

$$r_{it} = \alpha_i + \beta_1 r_{mt} + \beta_2 r_{mt-1} + \theta_i D_n + e_{it} \qquad (4.12)$$

[12] The problematic days are identified by the dummy variable approach in the first filter and then later in the third filter. The days on which the daily dummy variables are significant (5%) are considered as 'problematic'.

where t= -180, -179…-61

n is the specific day(s) on which the positive residual(s) is 3.5 or 4 times greater than the standard deviation.

For the firms with significant outliers, the results of the news search are also used for re-categorizing the firms which will be explained in detail later.

Step7: The analysis of the abnormal turnover (AT)

Previous research (see, e.g., Keown and Pinkerton (1981), Jarrell and Poulsen (1989), Sanders and Zdanowicz (1992) and King (2009)) indirectly examine the prevalence of illegal insider trading by examining abnormal returns and the abnormal turnovers (AT) prior to takeover announcement for stocks. The daily turnover in the context of this thesis is the same as the daily trading volume and the reason of using this terminology is because it is used in Datastream where I collected my data. The methodology applied in this thesis is based on the methodology used in Agarwal and Singh (2006) (mentioned in chapter 2 section 2.4.6). Here, I examine whether the daily average turnover calculated for two months (-60 to -11 trading days) prior to merger announcement and two weeks (-10 to -1 trading days) prior to the merger announcement gives any signal of presence of any possible insider trading. In order to carry out the analysis I use the average turnover calculated for a period from -180 to -61 day as the benchmark for average turnover in normal days.

The daily average turnover for each firm is compared with 1.25 multiplied by the benchmark, 1.50 multiplied by the benchmark and 2.0 multiplied by the benchmark. In order to define the significance of the two means, I use the t-test which is presented as follows:

$$t_{(\overline{X_1}-\overline{X_2})} = \frac{\overline{X}_1-\overline{X_2}}{\sqrt{\frac{\sigma_1^2}{N_1}+\frac{\sigma_2^2}{N_2}}} \qquad (4.13)$$

where $\overline{X_1}-\overline{X_2}$ is the difference between two means, in context of this research, $\bar{X}_1$ represent the average turnovers calculated from -60 to -11 trading day and from -10 to

-1 trading day and $\overline{X_2}$ represent 1.25 (and then 1.5 and 2.0) multiplied by the benchmark.

σ_1^2, σ_2^2 are the variance of the two samples

If there is no difference between the average turnover for each firm and 1.25 multiplied by the benchmark, or the average turnover for each firm and 1.50 multiplied by the benchmark or the average turnover for each firm and 2.0 multiplied by the benchmark, I categorize them as firms with abnormal turnovers (AT). I used three different comparators as these as they represent increasingly stringent tests of abnormality.

Step8: collect day 0 return and compare

The day 0 abnormal return hypothesis suggests that on day 0, there will be a substantial abnormal return for the targets due to the substantial trade volume in the stock market. According to the findings of the takeover researches, the target stock goes up dramatically, on average by about 30%, upon takeover announcement (Agrawal and Nasser, 2011). But with the existence of insider dealing, the abnormal return may be partially absorbed prior to the announcement date and as a result, on day 0, the abnormal return will be expected to be lower than in the normal situation. In other words, the firms which are suspected of insider dealing activities may have a comparatively lower average abnormal return on day 0 than the firms which are not. In order to calculate the day 0 return, firstly, based on the categorized firms according to the previous four filters, I collect the day 0 abnormal return from Equation 4.14 for each firm of the six groups[13].

$$\hat{e}_{i,0} = r_{i,0} - (\hat{\alpha}_i + \hat{\beta}_i r_{m,0}) \qquad (4.14)$$

[13] The categorization of the six groups will be discussed and presented later in Section 4.4

Secondly, I cumulate the day 0 abnormal returns for all the six groups and then take the average value using Equation 4.15

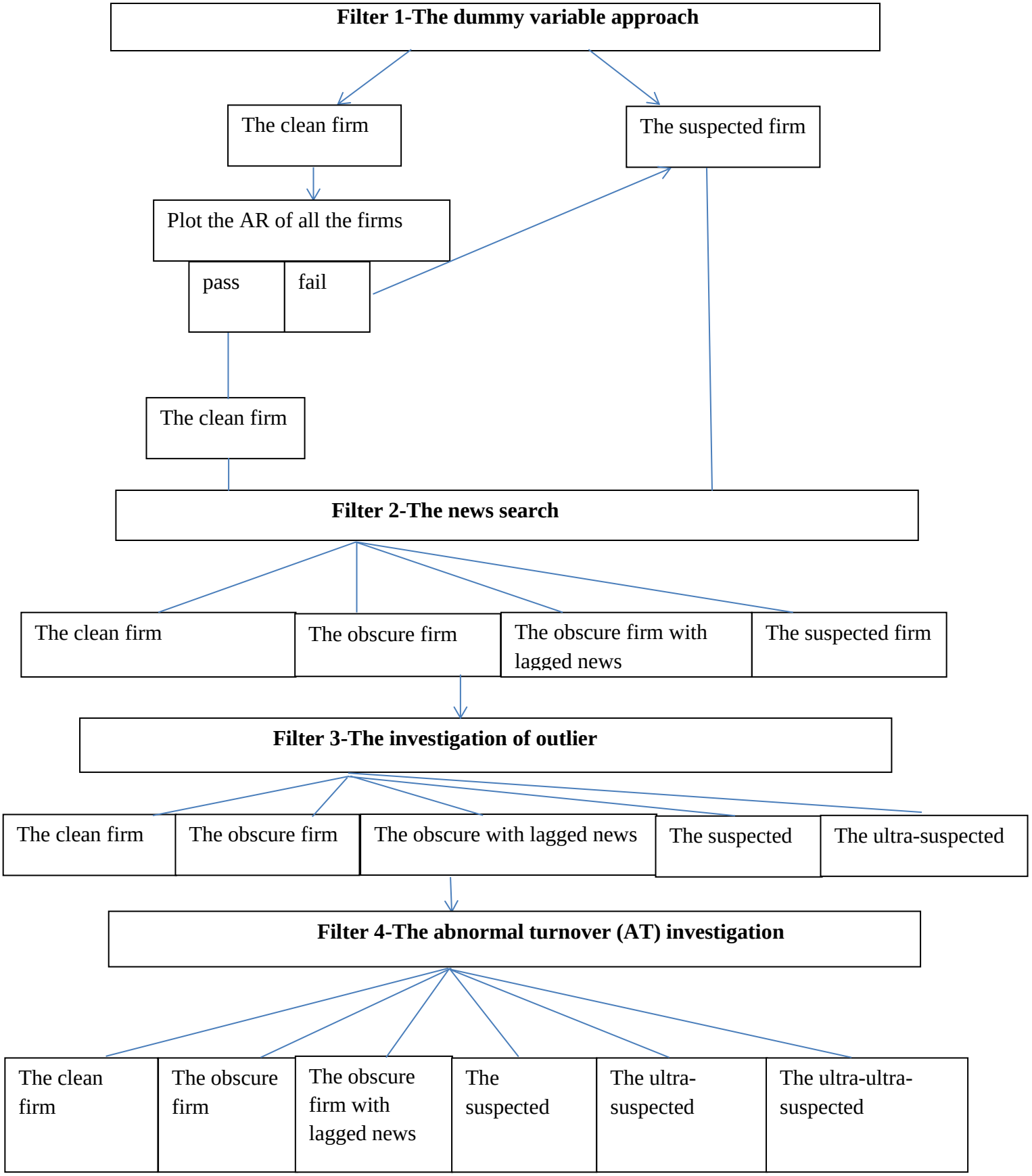
$$\frac{1}{n}\sum_{i=1}^{n}\hat{e}_{i,0} \qquad (4.15)$$

Apart from collecting the day 0 abnormal return for each group, the ratio of the increase on day 0 to that from day -60 to day 0 is also calculated. The ratio is based on the cumulative average abnormal return (CAAR) which is mentioned in chapter 3, Section 3.2. The first step is to calculate the CAAR from -60 day to 0 day for each group using Equation 4.16 and then calculate the ratio of the increase on day 0 to that from -60 to 0 day using Equation 4.17.

$$CAAR_t = \bar{e}_t + CAAR_{t-1} \qquad \text{t= -60, -59,…0.} \qquad (4.16)$$

$$Ratio = \frac{CAAR_0 - CAAR_{-1}}{CAAR_0} * 100\% \qquad (4.17)$$

Section 4.4 Summarising the four filter approach



Filter1-The dummy variable approach: Categorize the firms to be clean or suspected and plot the average abnormal return and the cumulative average abnormal return (CAAR) of both groups

All the firms are categorized into two groups-the clean firms and the suspected firms according to the results of the dummy variable approach. The firms with significant (5% significance level) daily dummy variable during a period from -60 day to -1 are classified as 'suspected' otherwise 'clean'. Here, both significant positive residuals and significant negative residuals are picked out because it might be the case that the insiders deliberately leak negative information to drive the share price down before they intend to buy. Then the average abnormal returns of both groups are calculated and plotted. However, the line plots of the clean groups of some years (e.g. 2007) show obvious spikes prior to the announcement day. This is an indication that the daily dummy variable approach might not be able to capture everything that happened. In other words, the 'clean' firms are not definitively clean. A possible reason for this is that insider trading is not necessary an activity of some specific separate days but of a series of days. To support the daily dummy variable approach, a news search and the detection of outliers are applied.

Filter2- The news search: Categorize the firms to be clean, obscure, obscure with lagged news and suspected and plot the average abnormal return of all groups

Based on filter1 and the news search, the firms are re-classified into four new categories-the clean, the obscure, the obscure with lagged news and the suspected. The clean firms are those which pass the daily dummy variable approach and do not have unusual spikes when the daily abnormal returns are plotted. The obscure firms refer to those which do not pass the daily dummy variable approach or experience unusual spikes in the abnormal return plot and at the same time, have public released news less than or equal to five days prior to the problematic days. I choose five days because they form a full trading week. The obscure firms with lagged news are the firms which have the same situation with the obscure firms except that they have a public news release less than or equal to five days after the problematic days. The reason for this category is that firstly, there might be a time lag between the news being released to the public and the news being reported by the media and secondly,

the insiders might release the news after taking advantage of it. The suspected firms are those do not pass the daily dummy variable approach and meanwhile do not have a report of any publicly released news.

Filter3-The investigation of outliers: Categorize the firms to be clean, obscure, obscure with lagged news, suspected and ultra-suspected based on the Filter 3 and the previous filters.

Table 4.3 shows the description of the five categories after the third filter:

Table 4.3: The description of the five categories after three filters

	The clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms
The description of the categories	The firms which pass all the three filters	The firms which failed the first or the third filter, but have news released less than 5 days prior to the problematic days	The firms which failed the first or the third filter, but have news released less than 5 days after the problematic days	The firms which failed the first or the third filter, and have no public news released within 5 days prior to or after the problematic days	The firms which failed all three filters

Source: Author's summation

Filter4-The abnormal turnover (AT) investigation: Categorize the firms to be absolute clean, obscure, obscure with lagged news, suspected and ultra-suspected and plot the average abnormal return of all groups.

Table 4.4: The description of the six categories after four filters

	The absolute clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
The description of the categories	The firms which pass all the four filters	The firms which failed the first or the third filter, but have news released less than 5 days prior to the problematic days	The firms which failed the first or the third filter, but have news released less than 5 days after the problematic days	The firms which failed the first or the third filter, and have no public news released within 5 days prior to or after the problematic days	The firms which failed all first three filters	The firms which failed all four filters

Source: Author's summation

Chapter 5 Insider trading in domestic U.K M&As from 2006 to 2010

Section 5.1 Introduction

In this chapter, we focus on domestic M&As in the U.K from 2006 to 2010. The objective is to determine whether there is any evidence of insider trading. Firstly, the source of the data is given—all the data ranging from 2006 to 2010 in the U.K are collected with Datastream. A table following shows the names, the M&A announcement dates and the industries of the targets and bidders. Secondly, the models and method used in this thesis are presented—the models used in this study are the market model, the market-adjusted model and the modified market model, which provide identical results, and an event study. While regulators regularly scrutinize trading in a target firm's shares after the fact, establishing illegal[14] insider trading using solely econometric techniques is a difficult and often impossible task (Minenna, 2003). As a result, I developed four filters to detect the possible insider trading[15]. The first filter is based on a dummy variable approach. In order to examine the exact day of the abnormal return made by the targets and bidders, dummy variables are included in the regression. However, the results of dummy variable approach indicate a problem that some of the clean firms identified by the dummy variables turn out to be 'not so clean'. In addition suspect firms may not reflect insider trading, but some other form of news event. In order to detect what really is going on with these firms, a news search is presented as a second filter apart from the dummy variable approach. Since the public rumours released prior to the takeover event would possibly affect the stock price movements, looking into the news can explain why some of the clean firms appear 'not so clean'. All English language news on all the targets is searched with Nexis, which is a world-wide information database. Apart from the daily dummy variable and the news search, a third filter is used based on the

[14] The terminology 'insider trading' used in this thesis stands for illegal insider trading unless otherwise stated.

[15] The study mainly focuses on the merger target and the analysis of the bidder firms ends up with the first filter.

detection of outliers. Finally, an analysis based on abnormal turnovers (AT) is included as a fourth filter in this study. In addition the empirical work will use a Granger causality test to analyse the 'causality' between the targets and the bidders in a merger.

Additionally, the day 0 returns are calculated separately for six different categories of firms. The theory is that on day 0, there will be massive abnormal return for the targets, but with the existence of insider dealing, the abnormal return will, at least partially, be absorbed prior to the announcement date. In other words, the firms which are suspected of insider dealing will have a comparatively lower average abnormal return on day 0 than the absolute clean firms. The hypothesis is supported by the empirical results in this study.

Section 5.2 Data and Model

Section 5.2.1The sample and data collection

All the M&A firms were firstly chosen and then their daily stock prices obtained. In order to examine the price movements of stocks of firms which were eventually taken over, a sample of 87 stocks listed on the FTSE 100 is gathered in total for a five year period. The sample size varies (19 in 2006, 16 in 2007, 18 in 2008, 16 in 2009 and 18 in 2010) because these are the maximum numbers of firms which could be collected with full daily returns. Initially, all M&A firms during the five-year period from 2006 to 2010 were collected, then, some of them are dropped from the sample due to two reasons - firstly, the bidder is taking over itself and secondly, some of the daily returns are missing. The remaining sample contains 87 target firms and 87 acquirers in the U.K from 2006 to 2010. Tables 5.36-40 in the appendix show both the 87 target firms and the 87 acquiring firms. The sample is collected with Thomson One Banker which is a database providing access to global financial data on both public and private companies including company accounts, scanned filings and annual reports, shareholder data, mergers and acquisitions, equities, bonds, syndicated loans and earnings estimates. Mergers not included in the sample are (a) unlisted private U.K companies, (b) unlisted nationalized U.K companies, (c) companies with transactions which are not complete, (d) non-U.K companies, or (e) companies which are doing

cross-border acquisition. In this chapter, therefore (a) both target firms and acquiring firms are public, (b) both target firms and acquiring firms are U.K firms, (c) announcement dates lie between 1st January and 31st December for each year sample. For each acquisition, the announcement date is the date on which particular news (M&A) concerning a given company (target firm) is announced to the public.

The daily prices of the stocks for both target firms and acquiring firms were collected by Datastream. The process of collecting the stock prices was in two steps. Firstly, the stock prices for each target and acquiring firm from -180 trading day (announcement day as day 0) to -61 trading day were collected and secondly, the stock prices for each target and acquiring firm from -60 trading day to +10 trading day were collected. The stock prices are documented in pence. The market return (r_m) is also collected from Datastream from the FT All Share index for each target and acquiring firm. For some firms, the daily price movement seems small or sometimes unchanged because they were small stocks which were thinly traded.

The turnover is collected from Datastream from the Turnover by volume (VO) which is explained by Datastream as the aggregation of the number of shares for each stock in the index traded on a particular day. The figure is always expressed in thousands. However, there are still some firms whose daily volumes cannot be found in Datastream. This might due to the imperfection of the database.

Table 5.1 Summary statistics for the sample of 87 target firms and the volume of 85 target firms in U.K. acquisitions for the period 2006-2010

Year	The number of target firms	The number of the firms whose daily turnover is obtained
2006	19	19
2007	16	16
2008	18	18
2009	16	16
2010	18	16
Total	87	85

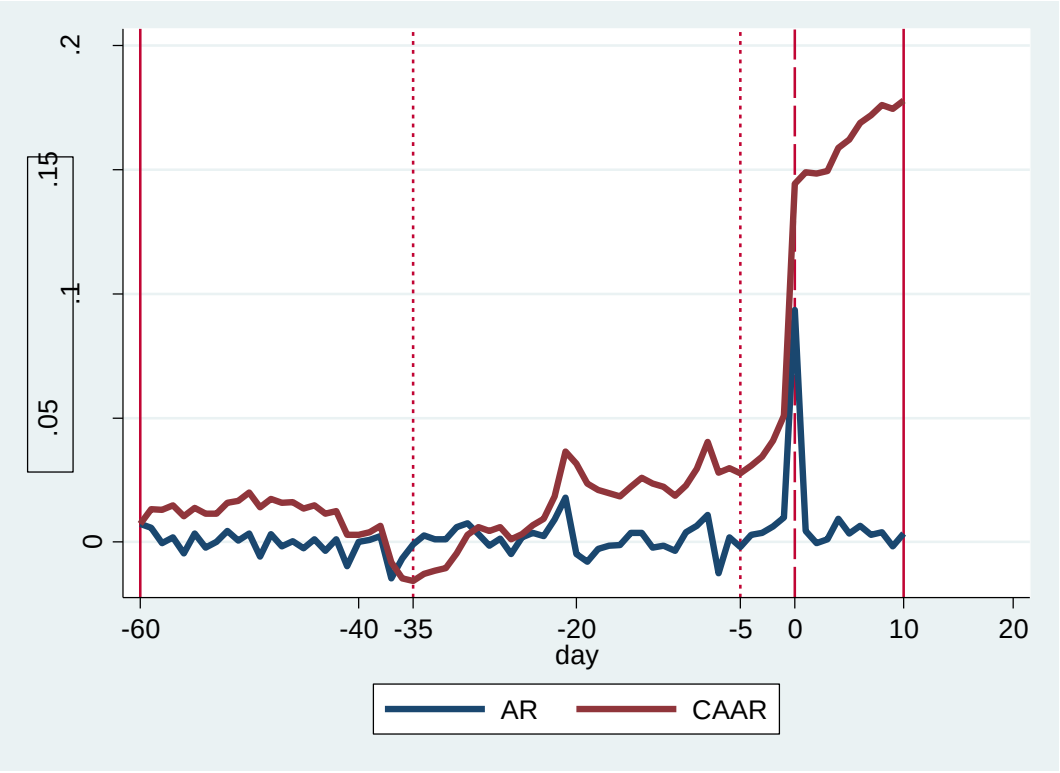
Source: Author's summary

Section 5.3 Empirical results

Section 5.3.1The analysis of AR and CAAR before the four-filter approach

The previous literature assumes that if there are no unusual price movements prior to the announcement date, one would expect both the AR and the CAAR to fluctuate randomly about zero. However, if there is leakage of, and trading on, inside information just prior to the announcement date, this should show up in the form of a positive AR as day approaches zero and a corresponding build up in CAAR (Keown and Pinkerton, 1981). In Graph 5.1-5.5, both the ARs and CAARs are plotted together from 2006 to 2010 to give an overview of the U.K stock market before the four filters.

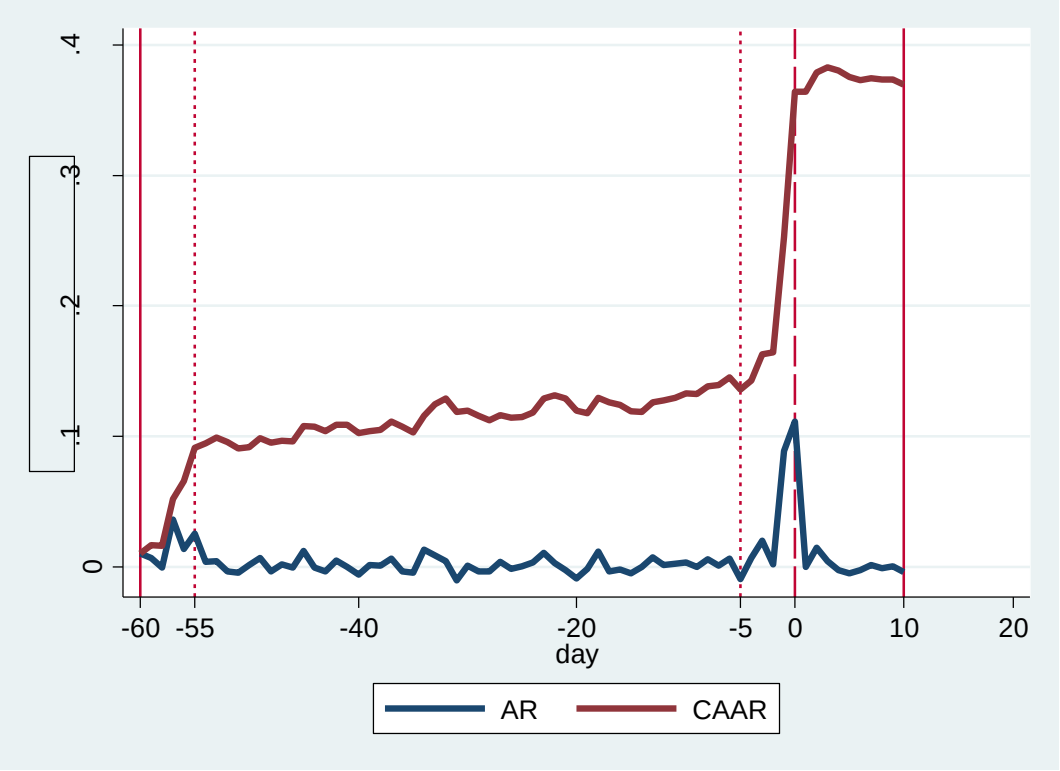
Graph 5.1: the AR and CAAR relative to the announcement day of the total U.K firms in 2006



Graph 5.1 shows that before announcement, the AR of the total firm is fluctuating randomly about zero and increases sharply to about 10% on day 0 which is an indication that the firms are clean in the U.K in 2006. However, the buildup in CAAR begins from day -35 relative to the date of announcement. From this day onwards, an increasing trend in the CAAR is observed, though with occasional dips. Nevertheless,

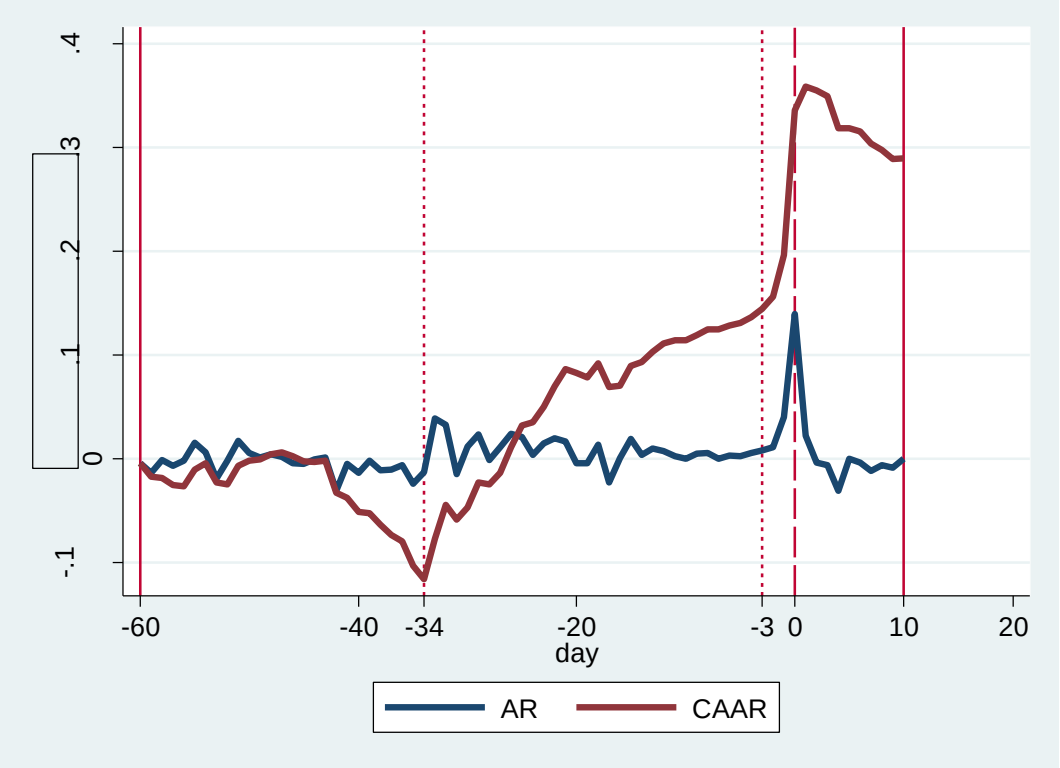
from day -5 onwards the buildup in CAAR is more perceptible as after this day the downward trend in the curve is less pronounced than that observed before day -5. Consequently, there is possible insider trading in the U.K in 2006.

Graph 5.2: the AR and CAAR relative to the announcement day of the total U.K firms in 2007



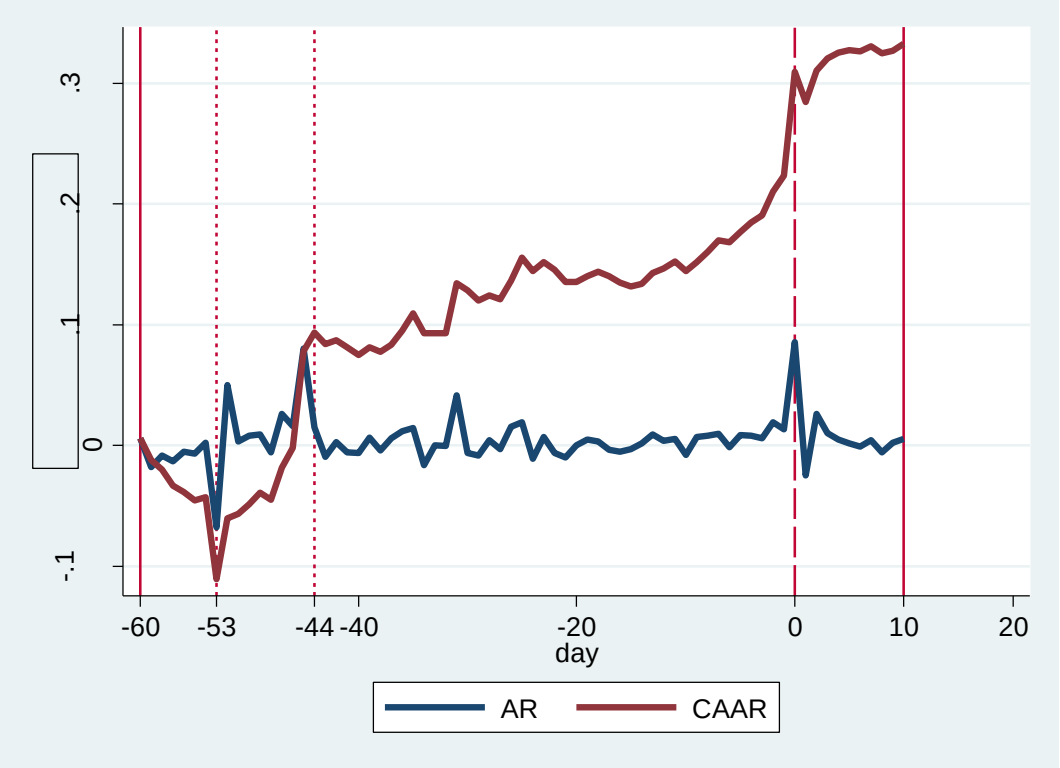
According to Graph 5.2, the AR is fluctuating randomly about zero before merger announcement. However, the CAAR increases sharply on -55 day and then nothing until -5 day relative to the merger announcement. From -5 day onwards, the CAAR buildup is substantially pronounced. Therefore, there is possible insider trading in the U.K in 2007 because according to the previous literature, only when the AR fluctuates randomly around zero alongside with no CAAR buildup before the merger announcement can be considered as 'clean' from insider trading activities.

Graph 5.3: the AR and CAAR relative to the announcement day of the total U.K firms in 2008



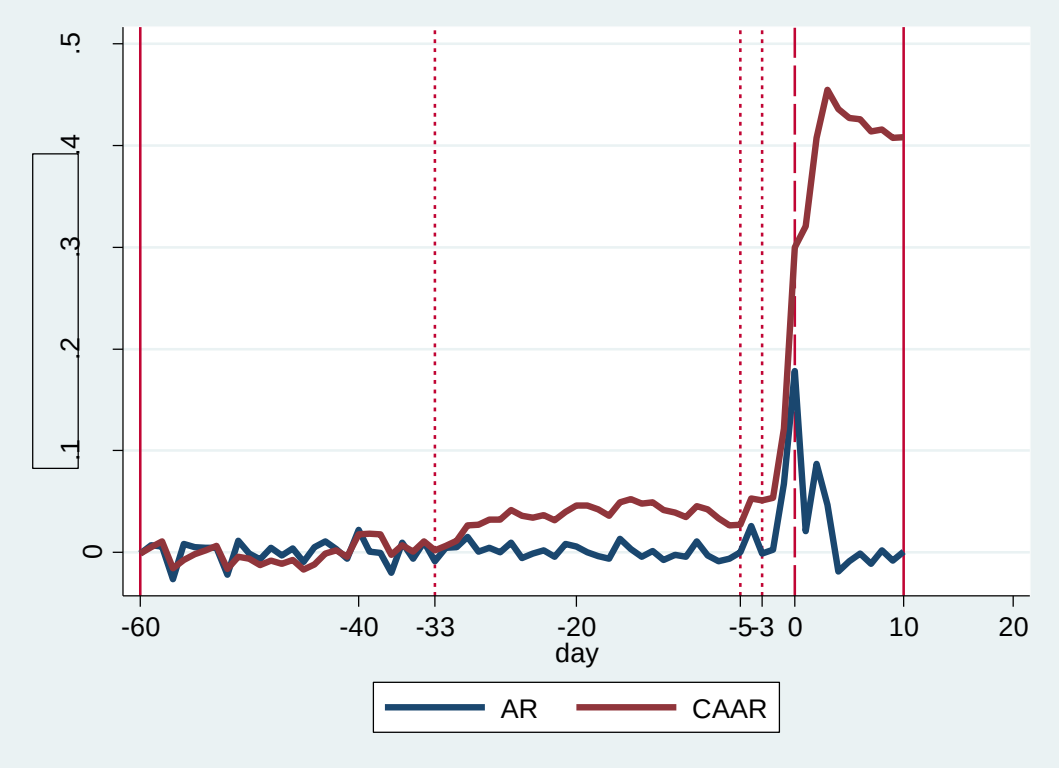
Graph 5.3 is the pattern of CAAR and AR from day -60 to day +10 relative to the announcement date. The AR is fluctuating randomly about zero though with occasional run-ups and dips. For the CAAR, it decreases sharply to -10% during a period from day -43 to day -34 and then starts to increase steadily. From day -34 onwards, an increased trend in the CAAR is observed and therefore, the CAAR has an obvious buildup before the merger announcement which indicates possible insider trading in the U.K in 2008.

Graph 5.4: the AR and CAAR relative to the announcement day of the total U.K firms in 2009



According to Graph 5.4, the CAAR has a pattern which is similar to that in Figure 5.5, it decreases sharply to -10% and then increases rapidly back to 10% before day -40. From day -40 onwards, the CAAR has a steadily increasing trend. Moreover, from -15 day onwards, the increasing in CAAR is accelerating with no perceptible dips. On the other hand, for the AR, before day -40, it has an obvious negative-positive pattern and then it has several positive spikes before merger announcement. As a result, it is suspected that in the U.K in 2009, there is possible insider trading taking place.

Graph 5.5: the AR and CAAR relative to the announcement day of the total U.K firms in 2010



Compared to Graph 5.1-5.4, the AR and CAAR in Figure 5.7 follow the assumption of a 'normal return situation' in the previous literature before day -5. The AR fluctuates randomly about zero though the event window and starts to increase from about day -3 while the CAAR starts to build up on day -5 before which an increasing trend is observed but not obviously. This might be an indication that insider trading is less a problem in 2010 than in the previous years.

Section 5.3.2The results of the first filter-the dummy variable approach for the targets

Table 5.6 shows the result by applying the dummy variable approach. For the first filter, both positive and negative errors were picked out as 'abnormal spikes'. The reason of taking the negative errors into account is because the insiders may deliberately leak negative information before they intend to buy shares.

Table 5.6: The descriptive statistics of the result in the U.K

Descriptive statistic					
Numbers of target firms with significant abnormal returns before day 0				Numbers of target firms with no significant abnormal returns before day 0	
2006	7			2006	12
2007	12			2007	4
2008	9			2008	9
2009	7			2009	9
2010	9			2010	9
Numbers of target firms with significant positive abnormal returns before day 0 (Target firms)		Numbers of target firms with significant negative abnormal returns before day 0 (Target firms)		Numbers of target firms with both significant positive and significant negative abnormal returns before day 0 (Target firms)	
2006	6	2006	1	2006	0
2007	9	2007	2	2007	1
2008	6	2008	0	2008	3
2009	3	2009	0	2009	4
2010	5	2010	2	2010	2
Total days with significant positive abnormal returns (Target firms)				Total days with significant negative abnormal returns (Target firms)	
2006	12			2006	0
2007	19			2007	2
2008	15			2008	6
2009	11			2009	4
2010	13			2010	4
Total days with significant abnormal returns (Target firms)				Total days with significant abnormal returns (Acquiring firms)	
2006	12			2006	19
2007	21			2007	22
2008	21			2008	18
2009	15			2009	9
2010	17			2010	6

Source: Author's calculation

Tables 5.7-11 show the AR of the total, the suspected and the clean firms respectively and CAAR of the total firms for the U.K from 2006 to 2010. The percent of daily residual positive of the total firms is also calculated. The results are from the market model. The results from the market adjusted model and the modified market model are included in the appendix. Although there are slight differences in the results from the three models, when plotted in graphs, it is apparent that the graphs are identical.

Table 5.7: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2006(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.007328	0.019815	4.46E-05	47%	0.007328
-59	0.005902	0.019135	-0.00182	53%	0.01323
-58	-0.0003	0.00143	-0.00131	53%	0.012928
-57	0.001938	0.000072	0.003026	53%	0.014866
-56	-0.00455	0.003763	-0.00939	53%	0.01032
-55	0.003391	0.002087	0.004152	37%	0.013711
-54	-0.00228	0.001227	-0.00433	37%	0.011431
-53	0.000123	0.004719	-0.00256	53%	0.011554
-52	0.00442	0.004749	0.004229	63%	0.015974
-51	0.000631	0.000792	0.000537	37%	0.016605
-50	0.003411	0.00101	0.004811	47%	0.020016
-49	-0.00584	0.00103	-0.00985	37%	0.014176
-48	0.003254	0.001138	0.004489	47%	0.01743
-47	-0.00165	-0.00824	0.002197	58%	0.015784
-46	0.000305	-2.61E-04	0.000636	47%	0.016089
-45	-0.00246	-0.00577	-0.00053	32%	0.013631
-44	0.001096	0.000981	0.001163	47%	0.014727
-43	-0.00338	4.18E-04	-0.00559	37%	0.011351
-42	0.001238	0.004503	-0.00067	58%	0.012589
-41	-0.00962	-0.00063	-0.01486	37%	0.002972
-40	0.000106	0.009129	-0.00516	37%	0.003078
-39	0.003391	-0.0007	0.001907	68%	0.004025
-38	0.002474	-0.0019	0.005023	58%	0.006499
-37	-0.0146	-0.00729	-0.01887	37%	-0.0081
-36	-0.00657	-0.00683	-0.00641	37%	-0.01467
-35	-0.00084	0.000787	-0.0018	53%	-0.01551
-34	0.002658	0.003112	0.002393	53%	-0.01285
-33	0.001245	0.003793	-0.00024	53%	-0.01161
-32	0.001049	0.003794	-5.52E-04	42%	-0.01056
-31	0.00594	0.027264	-0.0065	53%	-0.00462
-30	0.007509	0.002757	0.010282	53%	0.002889
-29	0.003193	0.007993	0.000394	37%	0.006083
-28	-0.00151	-0.00472	0.000371	32%	0.004578
-27	0.001418	0.013452	-0.0056	58%	0.005996
-26	-0.00475	-0.01655	0.002132	53%	0.001245
-25	0.001853	-0.00376	0.005128	42%	0.003098
-24	0.003829	0.010983	-0.00034	53%	0.006926
-23	0.002438	0.01925	-0.00737	58%	0.009364
-22	0.009126	0.027062	-0.00134	58%	0.01849
-21	0.017995	0.047415	0.000834	58%	0.036485
-20	-0.00483	-0.01	-0.00181	42%	0.031658
-19	-0.00794	-0.00676	-0.00863	26%	0.023718

-18	-0.0026	-0.00703	-1.5E-05	32%	0.021117
-17	-0.00151	0.004534	-0.00504	42%	0.019607
-16	-0.00107	0.000515	-0.00199	53%	0.018541
-15	0.003694	-0.00042	0.006092	58%	0.022235
-14	0.00374	-0.0022	0.007206	53%	0.025975
-13	-0.00229	-0.00592	-0.00017	42%	0.023684
-12	-0.00146	-0.00555	9.21E-04	47%	0.022223
-11	-0.00342	-0.00272	-0.00383	16%	0.018805
-10	0.004018	0.007253	0.002131	53%	0.022823
-9	0.006586	0.011974	0.003443	63%	0.029409
-8	0.010961	0.025742	0.00234	53%	0.04037
-7	-0.01245	-0.0233	-0.00612	37%	0.02792
-6	0.001828	0.006659	-0.00099	42%	0.029748
-5	-0.00194	-0.00425	-0.00059	37%	0.027811
-4	0.003071	0.007062	7.43E-04	53%	0.030882
-3	0.00367	0.000951	0.005256	68%	0.034552
-2	0.006333	0.007591	0.0056	58%	0.040885
-1	0.010058	0.032151	-0.00283	42%	0.050943
0	0.093489	0.020038	0.136336	68%	0.144432
1	0.004453	-0.00041	0.007292	58%	0.148885
2	-0.00047	-0.00363	0.001368	42%	0.148412
3	0.001127	0.001777	0.000748	47%	0.149539
4	0.009296	9.73E-05	0.014661	53%	0.158834
5	0.003372	0.009584	-0.00025	68%	0.162206
6	0.006632	0.005081	0.007537	63%	0.168838
7	0.003075	0.001846	0.003791	53%	0.171913
8	0.004085	0.000398	0.006235	47%	0.175997
9	-0.00158	0.000487	-0.00278	42%	0.174422
10	0.003579	-0.00191	0.006779	47%	0.178002
Average from day -60 to -6	0.000584873	0.003268836	-1.05E-03	-	0.012279655
Average from day -60 to -5	0.000539786	0.003134571	-1.04E-03	-	0.012557
Average from day -60 to -1	0.000889333	0.003721517	-8.27E-04	-	0.0143409
Average from day -60 to +1	0.002440355	0.003918048	1.52E-03	-	0.01860921
Average from day -60 to +10	0.002541099	0.003614779	1.86E-03	-	0.037210338

Table 5.8 Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2007(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.010119	0.013041	0.001354	75%	0.010119
-59	0.006628	0.009338	-0.0015	69%	0.016747
-58	-0.00081	0.005696	-0.02035	44%	0.015932
-57	0.036119	0.043972	0.012559	44%	0.052051
-56	0.013698	0.015993	0.006814	56%	0.065749
-55	0.025196	0.028952	0.01393	75%	0.090946
-54	0.003563	0.003317	0.004302	50%	0.094509
-53	0.004355	0.002157	0.010949	56%	0.098864
-52	-0.00346	-0.00532	0.00212	38%	0.095401
-51	-0.00482	-0.01036	0.011806	31%	0.090584
-50	0.001056	-0.00066	0.006197	56%	0.09164
-49	0.00686	0.010149	-0.00301	44%	0.0985
-48	-0.00346	-0.00584	0.003706	69%	0.095043
-47	0.001741	0.003462	-0.00342	44%	0.096784
-46	-0.00088	0.001892	-0.00918	31%	0.095909
-45	0.012228	-4.5E-05	0.049045	56%	0.108137
-44	-0.0005	0.002443	-0.00933	44%	0.107637
-43	-0.00345	0.000536	-0.01541	56%	0.104187
-42	0.004587	0.006826	-0.00213	63%	0.108775
-41	-0.0001	-0.00405	0.011731	50%	0.10867
-40	-0.00625	-0.00245	-0.01766	38%	0.10242
-39	0.001345	0.000304	0.00447	44%	0.103765
-38	0.000972	0.001456	-0.00048	25%	0.104737
-37	0.006413	0.006406	0.006433	69%	0.11115
-36	-0.00355	-0.00485	0.000353	31%	0.107603
-35	-0.0047	-0.00706	0.002369	56%	0.102901
-34	0.013094	0.016114	0.004035	63%	0.115995
-33	0.008632	0.009774	0.005205	63%	0.124627
-32	0.004392	0.000191	0.016992	44%	0.129019
-31	-0.01028	-0.01275	-0.00285	63%	0.118742
-30	0.000908	0.000378	0.002496	63%	0.119649
-29	-0.00369	-0.0075	0.007733	44%	0.115956
-28	-0.00343	-0.00389	-0.00205	44%	0.112529
-27	0.003654	0.009682	-0.01443	50%	0.116183
-26	-0.00166	0.00143	-0.01091	38%	0.114527
-25	0.000445	-0.00181	0.007195	50%	0.114972
-24	0.003078	0.001069	0.009104	56%	0.11805
-23	0.01078	0.007505	0.020605	56%	0.128829
-22	0.002621	0.007459	-0.01189	38%	0.131451
-21	-0.00267	-0.00114	-0.00726	50%	0.128783
-20	-0.00905	-0.01017	-0.00568	31%	0.119736
-19	-0.00184	-0.0031	0.001962	44%	0.117901
-18	0.011813	0.015025	0.002179	81%	0.129714
-17	-0.00344	-0.00386	-0.0022	31%	0.126274
-16	-0.00194	-0.00244	-0.00044	44%	0.124336
-15	-0.0053	-0.00906	0.005981	44%	0.119037
-14	-0.00028	0.001528	-0.0057	44%	0.118758

-13	0.007411	0.011283	-0.00421	25%	0.126169
-12	0.001156	0.000228	0.003938	56%	0.127325
-11	0.002198	0.000293	0.007912	50%	0.129522
-10	0.003259	0.005536	-0.00357	56%	0.132781
-9	-0.00025	-0.00064	0.000911	50%	0.132529
-8	0.005833	0.007466	0.000933	44%	0.138362
-7	0.000866	0.00637	-0.01565	44%	0.139227
-6	0.006064	0.008135	-0.00015	50%	0.145291
-5	-0.00956	-0.01435	0.004782	38%	0.135727
-4	0.006939	0.010351	-0.0033	50%	0.142666
-3	0.020078	0.021063	0.017123	69%	0.162744
-2	0.001588	0.00479	-0.00802	31%	0.164332
-1	0.088687	0.111777	0.019418	75%	0.25302
0	0.111492	0.110985	0.113014	75%	0.364512
1	-0.00035	-0.00114	0.002028	44%	0.364166
2	0.014685	0.020988	-0.00423	63%	0.378851
3	0.004288	0.001774	0.01183	75%	0.383139
4	-0.00265	-0.00394	0.00121	25%	0.380487
5	-0.00496	-0.00482	-0.0054	31%	0.375523
6	-0.00242	-0.00126	-0.00589	31%	0.373102
7	0.001511	0.002885	-0.00261	50%	0.374613
8	-0.00097	0.000296	-0.00479	44%	0.373639
9	0.00024	-0.0004	0.002163	62%	0.373879
10	-0.00404	-0.00451	-0.00262	31%	0.369839
Average from day -60 to -6	0.002641345	0.003062018	0.001379255	-	0.107182436
Average from day -60 to -5	0.002423464	0.002751089	0.001440018	-	0.107692161
Average from day -60 to -1	0.004216767	0.005034033	0.001764367	-	0.112558717
Average from day -60 to +1	0.005873355	0.006643339	0.003562968	-	0.120680661
Average from day -60 to +10	0.005208901	0.005956338	0.002965732	-	0.153032014

Table 5.9 Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2008(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00414	0.001456	-0.01294	61%	-0.00414
-59	-0.01321	-0.00626	-0.02412	39%	-0.01735

-58	-0.0009	-0.00288	0.002201	61%	-0.01825
-57	-0.00671	-0.01357	0.004059	61%	-0.02496
-56	-0.00154	0.011265	-0.02165	56%	-0.0265
-55	0.015909	0.012283	0.021608	72%	-0.01059
-54	0.006428	0.007453	0.004816	89%	-0.00416
-53	-0.01873	-0.03407	0.005389	39%	-0.02289
-52	-0.00136	-0.00617	0.006188	56%	-0.02425
-51	0.017334	0.0266	0.002771	89%	-0.00692
-50	0.005537	0.008458	0.000945	67%	-0.00138
-49	0.001123	0.001047	0.001241	67%	-0.00026
-48	0.004607	0.00855	-0.00159	61%	0.004349
-47	0.002085	0.003838	-0.00067	61%	0.006434
-46	-0.00393	-0.00205	-0.00689	78%	0.002504
-45	-0.00462	-0.00494	-0.00412	50%	-0.00212
-44	-0.00068	-0.00091	-0.00033	78%	-0.0028
-43	0.0012	0.002208	-0.00038	78%	-0.0016
-42	-0.03097	-0.05159	0.001429	67%	-0.03257
-41	-0.00505	-0.00801	-0.00039	56%	-0.03762
-40	-0.01324	-0.02401	0.003679	56%	-0.05086
-39	-0.00172	-0.00016	-0.00418	72%	-0.05258
-38	-0.0108	-0.0248	0.011193	61%	-0.06338
-37	-0.01008	-0.01896	0.00387	67%	-0.07346
-36	-0.00586	-0.01429	0.007402	72%	-0.07932
-35	-0.02373	-0.03122	-0.01197	44%	-0.10305
-34	-0.01257	-0.02186	0.002012	78%	-0.11563
-33	0.038935	0.068082	-0.00687	61%	-0.07669
-32	0.032711	0.054242	-0.00112	89%	-0.04398
-31	-0.01461	-0.02834	0.006958	78%	-0.05859
-30	0.0121	0.018232	0.002463	67%	-0.04649
-29	0.023522	0.030943	0.011858	72%	-0.02297
-28	-0.00126	-0.00709	0.007886	67%	-0.02423
-27	0.011125	0.008245	0.015651	50%	-0.01311
-26	0.024116	0.010946	0.04481	72%	0.011008
-25	0.02098	-0.01054	0.070513	61%	0.031987
-24	0.003587	-0.00054	0.010075	72%	0.035574
-23	0.014721	0.022618	0.002312	78%	0.050295
-22	0.01966	0.029783	0.003753	72%	0.069955
-21	0.016671	0.020839	0.010122	67%	0.086627
-20	-0.00396	-0.00969	0.005039	50%	0.082667
-19	-0.00433	-0.0173	0.016051	56%	0.078335
-18	0.013652	0.019567	0.004356	78%	0.091986
-17	-0.02258	-0.02166	-0.02402	50%	0.069407
-16	0.000916	-0.01632	0.028002	50%	0.070323
-15	0.019446	0.004105	0.043554	56%	0.089769
-14	0.003598	0.00043	0.008576	72%	0.093367
-13	0.010107	0.01722	-0.00107	67%	0.103474
-12	0.007852	0.008117	0.007437	78%	0.111326
-11	0.002777	-0.0048	0.01468	67%	0.114103
-10	0.000343	-0.00292	0.005468	61%	0.114447
-9	0.004824	0.006781	0.001749	61%	0.119271

-8	0.005611	0.002301	0.010812	67%	0.124881
-7	0.00015	-0.00771	0.012495	50%	0.125031
-6	0.003318	0.00705	-0.00255	67%	0.128349
-5	0.0029	0.005046	-0.00047	72%	0.131249
-4	0.005494	0.008284	0.00111	61%	0.136743
-3	0.007959	0.009017	0.006297	61%	0.144702
-2	0.011581	0.006834	0.019042	67%	0.156283
-1	0.040505	0.064008	0.003572	67%	0.196788
0	0.139482	0.067907	0.251959	67%	0.336271
1	0.022384	0.038081	-0.00228	61%	0.358655
2	-0.00342	-0.01589	0.016185	72%	0.355237
3	-0.00575	-0.01322	0.00597	67%	0.349483
4	-0.03075	-0.05066	0.000535	50%	0.318734
5	5.14E-05	-0.00052	0.00095	61%	0.318785
6	-0.00339	-0.00368	-0.00293	72%	0.315399
7	-0.01126	-0.00855	-0.0155	50%	0.304143
8	-0.00614	-0.00045	-0.01507	61%	0.298007
9	-0.00864	-0.0238	0.015167	72%	0.289362
10	0.000315	-0.00361	0.006475	56%	0.289677
Average from day -60 to -6	0.002333909	0.000363618	0.005428418	-	0.013686709
Average from day -60 to -5	0.002344018	0.000447232	0.005323089	-	0.015786036
Average from day -60 to -1	0.003280067	0.001886467	0.005468567	-	0.0253089
Average from day -60 to +1	0.005785	0.003535097	0.009319242	-	0.035700968
Average from day -60 to +10	0.00408009	0.001391493	0.008303873	-	0.071158972

Table 5.10 Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2009(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.005834	0.004106	0.007179	63%	0.005835
-59	-0.01783	-0.03032	-0.00812	38%	-0.012

-58	-0.00808	-0.00365	-0.01152	31%	-0.02007
-57	-0.01315	-0.02382	-0.00485	44%	-0.03322
-56	-0.00518	-0.00137	-0.00815	44%	-0.0384
-55	-0.0068	-0.0218	0.004856	56%	-0.0452
-54	0.002261	-0.0077	0.010009	56%	-0.04294
-53	-0.06751	-0.02694	-0.09906	38%	-0.11045
-52	0.050065	-0.00728	0.094669	31%	-0.06039
-51	0.003574	0.002464	0.004438	81%	-0.05681
-50	0.008332	0.013086	0.004635	63%	-0.04848
-49	0.009148	0.024729	-0.00297	56%	-0.03933
-48	-0.00543	-0.00845	-0.00309	56%	-0.04476
-47	0.026393	0.032593	0.02157	75%	-0.01837
-46	0.016287	0.042374	-0.004	63%	-0.00208
-45	0.080323	0.009394	0.135491	75%	0.078239
-44	0.015034	-0.00976	0.034323	56%	0.093273
-43	-0.00914	-0.00744	-0.01046	44%	0.084137
-42	0.002811	-0.01518	0.016802	50%	0.086948
-41	-0.00583	-0.01467	0.001039	56%	0.081114
-40	-0.00609	-0.00839	-0.00431	50%	0.075019
-39	0.006269	-0.00756	0.017024	50%	0.081287
-38	-0.0039	-0.02702	0.014094	38%	0.077392
-37	0.005848	0.005224	0.006334	56%	0.083241
-36	0.011572	0.051927	-0.01981	69%	0.094813
-35	0.014508	0.038935	-0.00449	50%	0.109321
-34	-0.01639	-0.01257	-0.01936	38%	0.092928
-33	0.000118	0.008549	-0.00644	56%	0.093046
-32	-0.00027	-0.00975	0.007105	50%	0.092778
-31	0.041606	0.112942	-0.01388	69%	0.134384
-30	-0.00606	-0.017	0.002438	44%	0.128319
-29	-0.00846	-0.01123	-0.0063	44%	0.119859
-28	0.004146	0.006382	0.002407	56%	0.124005
-27	-0.00305	-0.00722	0.000195	38%	0.120957
-26	0.015682	0.035536	0.00024	69%	0.136639
-25	0.01912	0.042732	7.55E-04	56%	0.155759
-24	-0.01118	-0.02656	7.90E-04	38%	0.144582
-23	0.007022	6.24E-05	0.012436	63%	0.151604
-22	-0.00637	-0.00308	-0.00893	38%	0.145233
-21	-0.01008	-0.02206	-0.00076	50%	0.135154
-20	6.89E-05	0.001951	-0.0014	50%	0.135223
-19	0.004986	0.004015	0.005742	50%	0.140209
-18	0.003551	0.004864	0.00253	56%	0.143761
-17	-0.0036	0.010928	-0.0149	56%	0.140159
-16	-0.00539	0.005512	-0.01387	38%	0.134767
-15	-0.00319	0.008861	-0.01257	56%	0.131573
-14	0.001986	0.004116	0.00033	63%	0.13356
-13	0.009271	0.01564	0.004317	56%	0.142831
-12	0.003876	0.027736	-0.01468	38%	0.146706
-11	0.005403	0.01831	-0.00464	63%	0.152109
-10	-0.00763	-0.00527	-0.00947	50%	0.144475
-9	0.007284	0.035689	-0.01481	50%	0.151759

-8	0.008378	0.02711	-0.00619	69%	0.160136
-7	0.009593	0.006353	0.012114	44%	0.16973
-6	-0.0016	0.006327	-0.00776	50%	0.168131
-5	0.008544	0.003698	0.012314	50%	0.176675
-4	0.007995	0.007165	0.008641	69%	0.18467
-3	0.005827	0.009819	0.002723	81%	0.190498
-2	0.019394	0.023878	0.015906	56%	0.209892
-1	0.013504	0.02335	0.005846	56%	0.223396
0	0.085761	0.130404	0.051039	75%	0.309157
1	-0.02485	-0.00675	-0.03893	38%	0.284305
2	0.026172	0.040226	0.015242	81%	0.310477
3	0.010132	0.022655	0.000392	69%	0.320609
4	0.004886	0.005697	0.004256	50%	0.325495
5	0.001825	-0.00039	0.003548	56%	0.327321
6	-0.00114	0.005308	-0.00616	50%	0.326179
7	0.004343	0.01191	-0.00154	69%	0.330522
8	-0.00579	-0.00965	-0.00279	50%	0.324728
9	0.002332	-0.00413	0.007359	56%	0.32706
10	0.005389	0.00824	0.003172	56%	0.332449
Average from day -60 to -6	0.003057089	0.004951953	0.001583127	-	0.079063545
Average from day -60 to -5	0.00315507	0.004929561	0.00177475	-	0.080806607
Average from day -60 to -1	0.003723398	0.005671123	0.002208367	-	0.088893767
Average from day -60 to +1	0.004585724	0.007482603	0.002332435	-	0.095598194
Average from day -60 to +10	0.00468259	0.007658977	0.002367465	-	0.124675042

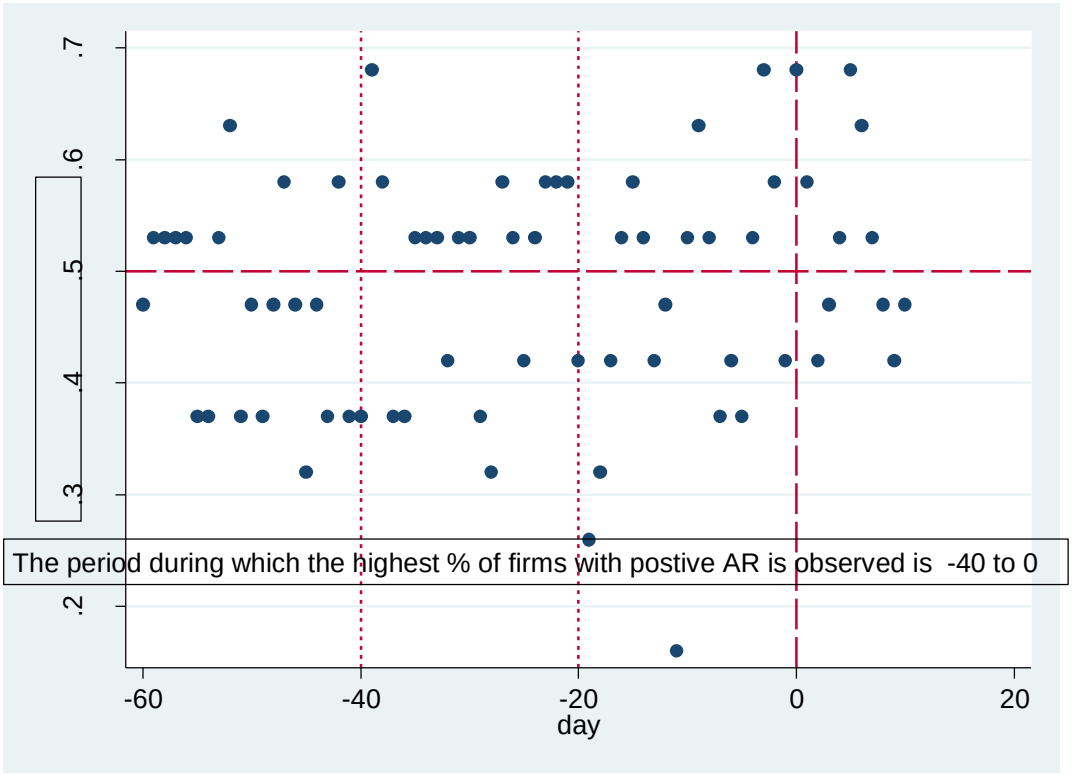
Table 5.11 Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2010 (from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00146	0.000554	-0.00347	61%	-0.00146
-59	0.006597	0.011732	0.001461	39%	0.005139
-58	0.00541	0.01065	0.00017	44%	0.010549

-57	-0.0262	-0.04548	-0.00692	50%	-0.01565
-56	0.00821	0.007277	0.009144	56%	-0.00744
-55	0.005294	-0.0003	0.010886	61%	-0.00215
-54	0.004197	0.003541	0.004853	67%	0.002048
-53	0.004217	-0.00328	0.011715	78%	0.006265
-52	-0.02236	-0.03515	-0.00957	39%	-0.0161
-51	0.011363	0.038687	-0.01596	39%	-0.00473
-50	-0.00129	0.000664	-0.00323	39%	-0.00602
-49	-0.00671	-0.00784	-0.00557	44%	-0.01272
-48	0.004608	0.007643	0.001574	56%	-0.00812
-47	-0.0032	-0.01072	0.004323	67%	-0.01132
-46	0.003618	0.011146	-0.00391	56%	-0.0077
-45	-0.00923	-0.01638	-0.00208	50%	-0.01693
-44	0.005153	0.007784	0.002521	56%	-0.01177
-43	0.010526	0.010633	0.010419	56%	-0.00125
-42	0.002942	-0.00355	0.009431	56%	0.001694
-41	-0.0062	0.00347	-0.01587	39%	-0.00451
-40	0.022102	0.041209	0.002996	72%	0.017597
-39	0.000369	-0.0044	0.005135	56%	0.017966
-38	-0.00033	0.00368	-0.00435	67%	0.017632
-37	-0.02009	-0.03797	-0.00221	44%	-0.00246
-36	0.009224	-0.00021	0.018654	61%	0.006766
-35	-0.00612	-0.00816	-0.00408	44%	0.000646
-34	0.010246	0.02112	-0.00063	33%	0.010892
-33	-0.00904	-0.01381	-0.00427	39%	0.001855
-32	0.004192	0.004263	0.004121	72%	0.006047
-31	0.005261	0.004483	0.00604	56%	0.011308
-30	0.01531	0.019409	0.011211	39%	0.026618
-29	0.000716	-0.00179	0.003217	56%	0.027334
-28	0.004603	0.000771	0.008435	61%	0.031937
-27	0.000173	0.004198	-0.00385	44%	0.032111
-26	0.009192	0.006887	0.011497	61%	0.041303
-25	-0.0055	-0.00572	-0.00528	33%	0.035806
-24	-0.00149	-0.00254	-0.00044	56%	0.034312
-23	0.002022	-0.0148	0.01884	44%	0.036334
-22	-0.0047	-0.00492	-0.00448	44%	0.031633
-21	0.008203	0.008464	0.007942	67%	0.039836
-20	0.005843	0.0093	0.002385	61%	0.045678
-19	0.000225	0.006038	-0.00559	67%	0.045903
-18	-0.0039	-0.00562	-0.00217	56%	0.042007
-17	-0.006	-0.00862	-0.00338	44%	0.036006
-16	0.013056	0.024637	0.001476	61%	0.049063
-15	0.003347	-0.00029	0.006989	44%	0.05241
-14	-0.00434	0.006104	-0.01479	28%	0.048066
-13	0.001154	0.024786	-0.02248	44%	0.04922
-12	-0.00745	-0.01162	-0.00327	44%	0.041772
-11	-0.00273	-0.01583	0.010361	72%	0.039037
-10	-0.00431	-0.00086	-0.00775	33%	0.034732
-9	0.010783	0.005883	0.015683	61%	0.045515
-8	-0.00341	-0.00365	-0.00317	39%	0.042107

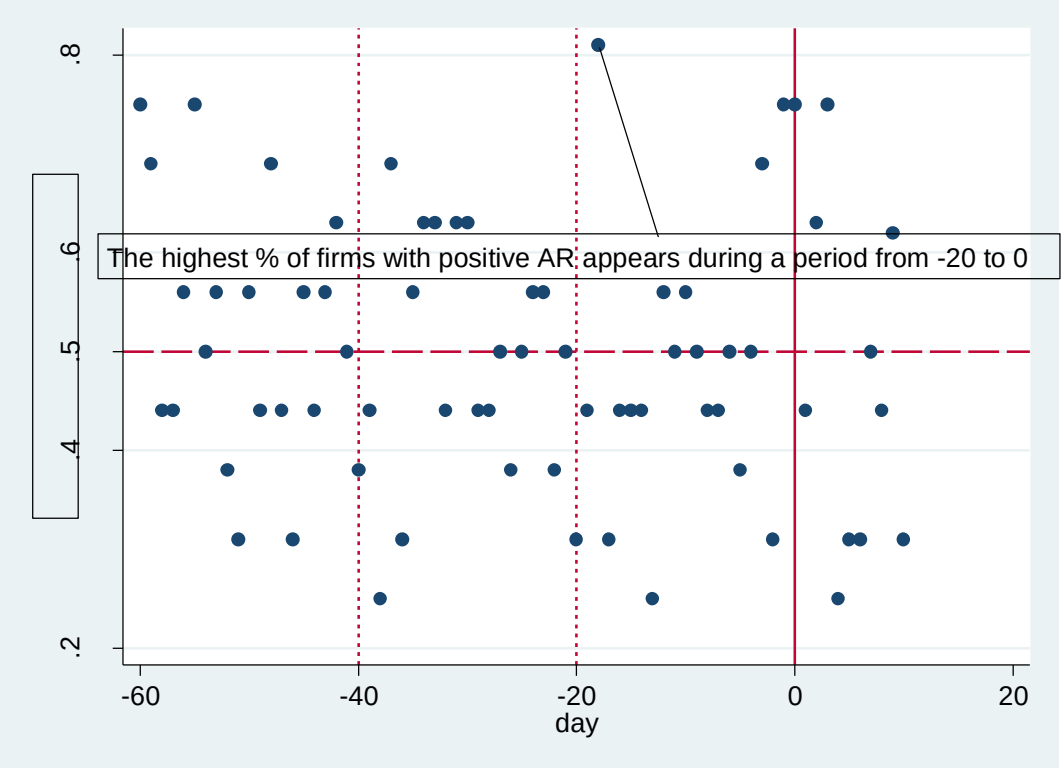
-7	-0.00899	-0.02004	0.002056	44%	0.033117
-6	-0.00637	0.010601	-0.02335	50%	0.026744
-5	0.000232	0.00111	-0.00065	44%	0.026977
-4	0.02578	0.047852	0.003708	50%	0.052757
-3	-0.00151	-0.00763	0.004618	44%	0.051249
-2	0.002446	0.007349	-0.00246	44%	0.053695
-1	0.067601	0.14365	-0.00845	50%	0.121296
0	0.178476	0.096961	0.259991	83%	0.299773
1	0.020984	0.032743	0.009225	56%	0.320756
2	0.087075	0.1644	0.009749	33%	0.407831
3	0.046862	0.088399	0.005325	56%	0.454693
4	-0.01891	-0.0327	-0.00513	44%	0.435779
5	-0.0086	-0.01932	0.002117	50%	0.427178
6	-0.00157	-0.01608	0.012946	44%	0.425609
7	-0.01164	-0.02503	0.00176	44%	0.413971
8	0.001672	0.005966	-0.00262	61%	0.415643
9	-0.00828	-0.00622	-0.01034	33%	0.407364
10	0.000608	0.001318	-0.0001	44%	0.407972
Average from day -60 to -6	0.000486109	0.000582982	0.000389364	-	0.017357727
Average from day -60 to -5	0.000481571	0.000592393	0.000370804	-	0.0175295
Average from day -60 to -1	0.002021417	0.003739917	0.000303017	-	0.021010817
Average from day -60 to +1	0.005173306	0.005711274	0.004635435	-	0.030341581
Average from day -60 to +10	0.005745944	0.007251155	0.004240901	-	0.079960817

Graph 5.6: The % of firms with positive AR in the U.K 2006



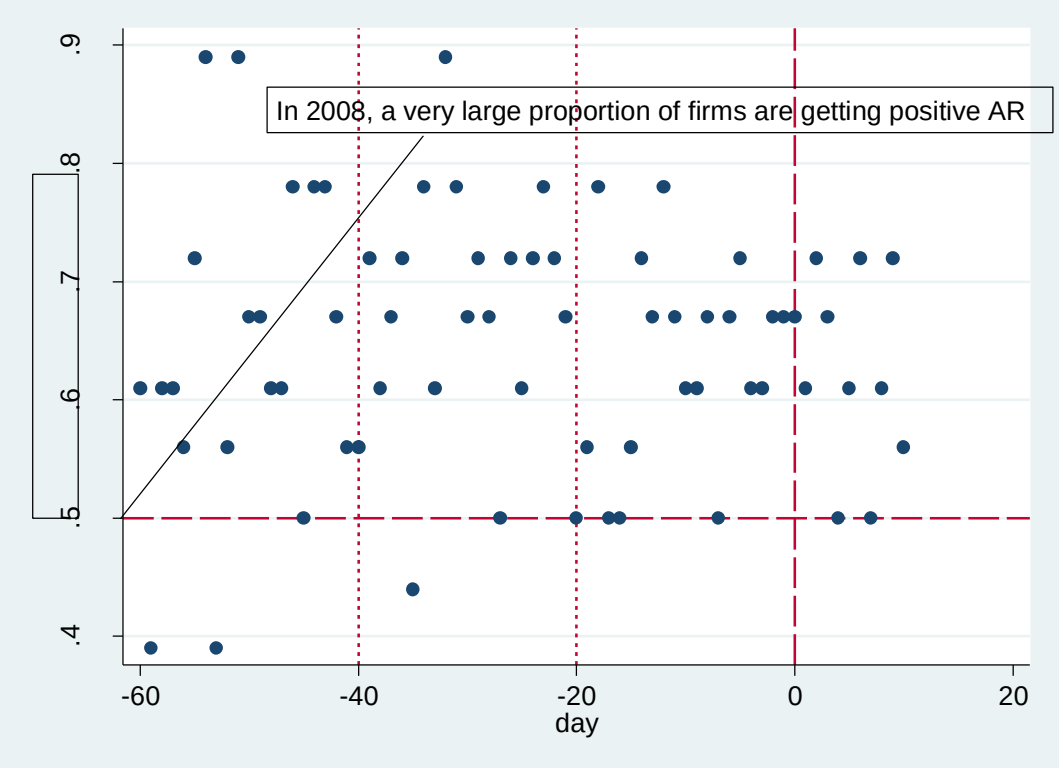
Graph 5.6 is the percentage of firms with positive AR in the U.K 2006. The highest two percentages appear on day -39 and day -1 on which days there are about 70% of firms getting positive AR. Moreover, on 23 days out of 40, during a period from -40 to 0 day, more than 50% of the total firms have positive AR. This is an indication that insider trading is potentially more of a problem one month before the announcement day than for other periods.

Graph 5.7: The % of firms with positive AR in the U.K 2007



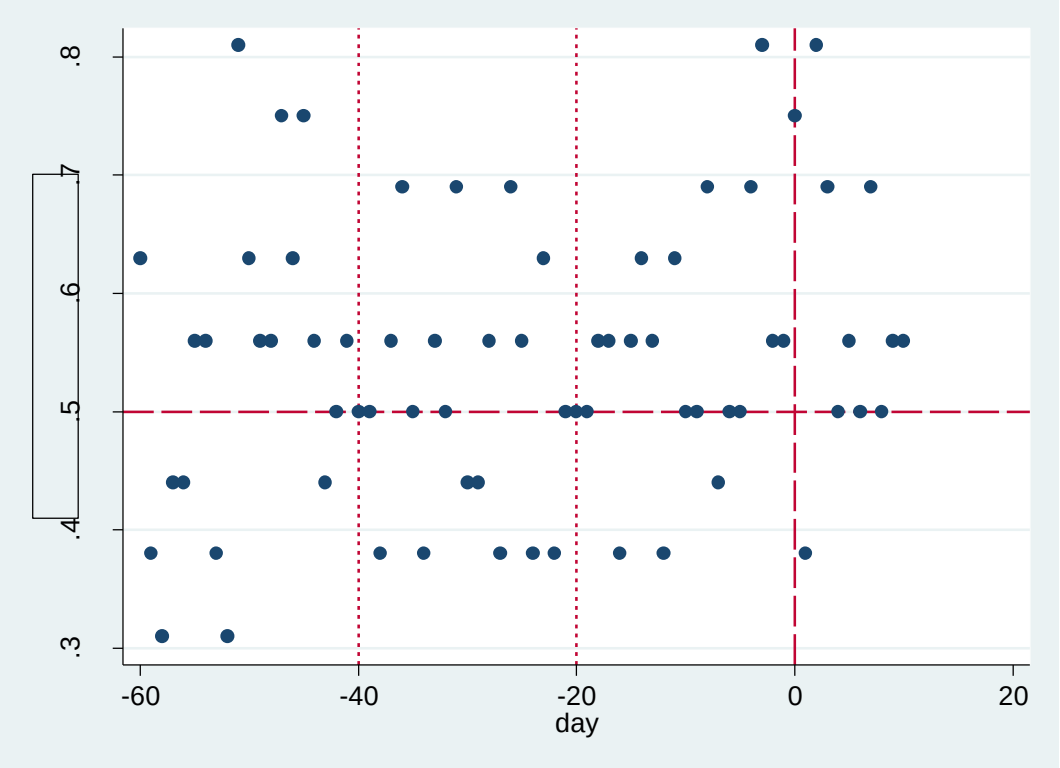
According to Graph 6, in 2007 there are much higher percentages of firms with positive AR than in 2006. The highest percentage appears on -18 day which is more than 80%.

Graph 5.8: The % of firms with positive AR in the U.K 2008



It is noticeable that in 2008, a very large proportion of firms are getting positive AR. During the event window, only on three days there are less than 50% firms experiencing positive AR. Furthermore, from day -20 onwards, there is no case of less than 50% firms having positive AR.

Graph 5.9: The % of firms with positive AR in the U.K 2009



According to Graph 5.9, the highest two percentages of firms with positive AR appear on -51 day and -3 day. On both these two days there are more than 80% firms getting positive AR. When comparing to other years (2006, 2007 and 2010), in both years 2008 and 2009, large numbers of positive returns were witnessed. This might be a sign of people responding to the crisis. People in financial trouble may seek to recover their losses elsewhere, for example by doing insider trading. This may explain why in both 2008 and 2009, larger numbers of positive returns were shown.

Graph 5.10: The % of firms with positive AR in the U.K 2010

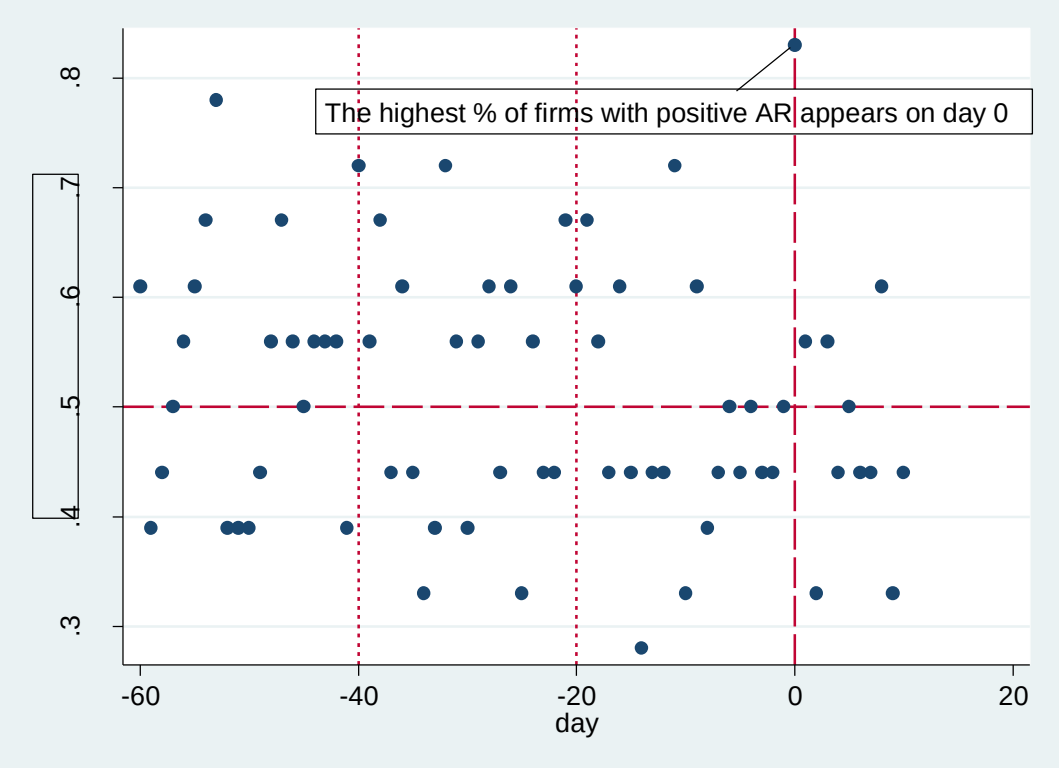
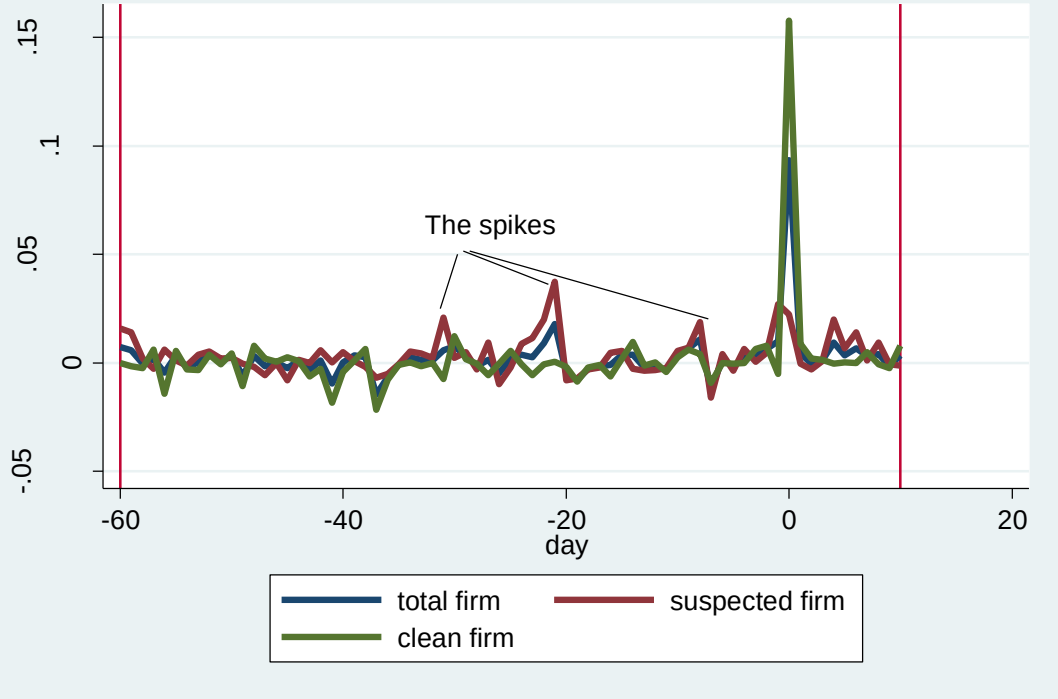


Table 5.12: The codes of the clean and suspected target firms after the dummy variable approach in the U.K from 2006 to 2010

2006					
The code of the clean firms			The code of the suspected firms		
T0603	T0613	T0618	T0601	T0610	
T0605	T0614	T0619	T0602	T0611	
T0606	T0615		T0604		
T0609	T0616		T0607		
T0612	T0617		T0608		
2007					
The code of the clean firms			The code of the suspected firms		
T0704			T0701	T0710	T0715
T0707			T0702	T0711	T0716
T0708			T0703	T0712	
T0709			T0705	T0713	
			T0706	T0714	
2008					
The code of the clean firms			The code of the suspected firms		
T0803	T0814		T0801	T0811	
T0804	T0815		T0802	T0812	
T0806	T0816		T0805	T0813	
T0808	T0818		T0807	T0817	
T0810			T0809		
2009					

The code of the clean firms		The code of the suspected firms	
T0903	T0910	T0901	T0914
T0904	T0911	T0902	T0915
T0905	T0912	T0906	
T0907	T0916	T0908	
T0909		T0913	
2010			
The code of the clean firms		The code of the suspected firms	
T1001	T1012	T1002	T1011
T1004	T1013	T1003	T1015
T1006	T1014	T1005	T1017
T1008	T1016	T1007	T1018
T1009		T1010	

Figure 5.1 The daily average return of the U.K target firms 2006



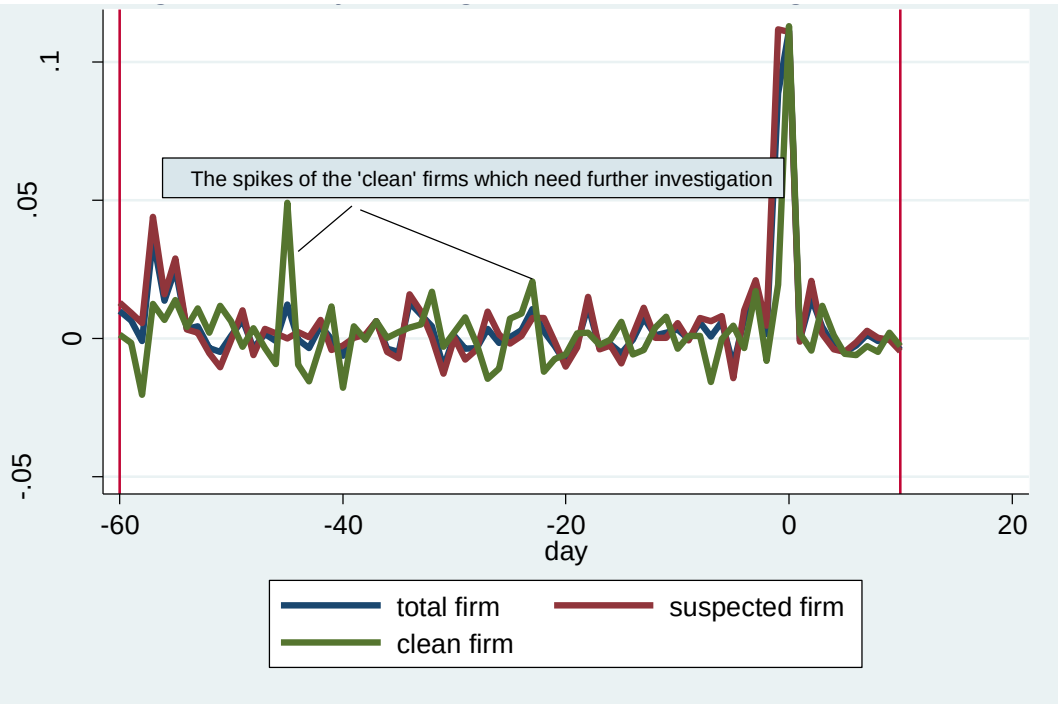
According to Figure 5.1, the AR for the clean firms appears more stable than both those for the suspected firms and for the total firms. As can be seen from Figure 5.1, during -40 day to -20 day, the spikes for the suspected firms suggest that they are experiencing high abnormal returns. Moreover, the reason why the AR for the clean firms are more stable than those for the total firms can be concluded to be the disturbance of the suspected firms. This seems obvious because when the suspicious firms have spikes from day -40 to day -20, the shape of the line for the total firms is very much like that for the suspected firms. The only difference is that the total firms do not have as high a spike as the suspicious firms. By calculating the variance of the

total, the suspected and the clean firms from day -40 to day -20, the evidence that the suspected firms have the highest variance substantiates the conclusion made earlier. That the variance of the clean firms is slightly greater than that of the total firms might be due to the very significant downward spike below zero for the clean firms.

Table 5.13: The variance of the total, the suspected and the clean firms when -40<day<-20

	The total firms	The suspected firms	The clean firms
Variance	.0000431	.0001266	.0000472

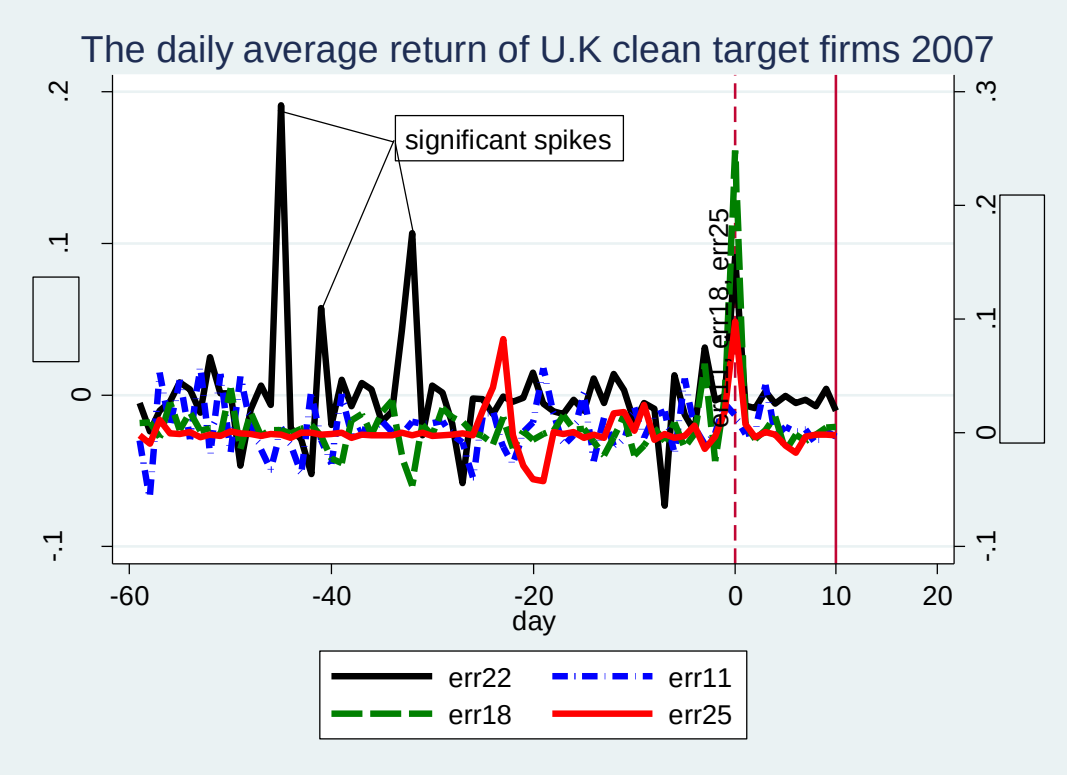
Figure 5.2 The daily average return of the U.K target firms 2007



According to Figure 5.2, the suspicious firms are having spikes during mainly two periods-from day -60 to day -50 and from day -40 to day -20. However, it is notable that the clean firms are also having spikes and what is more, the spike during day -50 to day -40 is very significant. In addition, in Figure 5.2, both the spikes of the suspicious firms and clean firms are surrounded by negative ARs. This makes the multiple day dummy variable difficult to pick up. In other words, the daily dummy variable picks up some but not all of the single spikes. But it does pick up when there is continuous trading over several days to make the visible evidence of insider trading.

In order to find out the reason, the following Graph 5.11 is presented on which the four clean firms in the U.K in 2007 are all included.

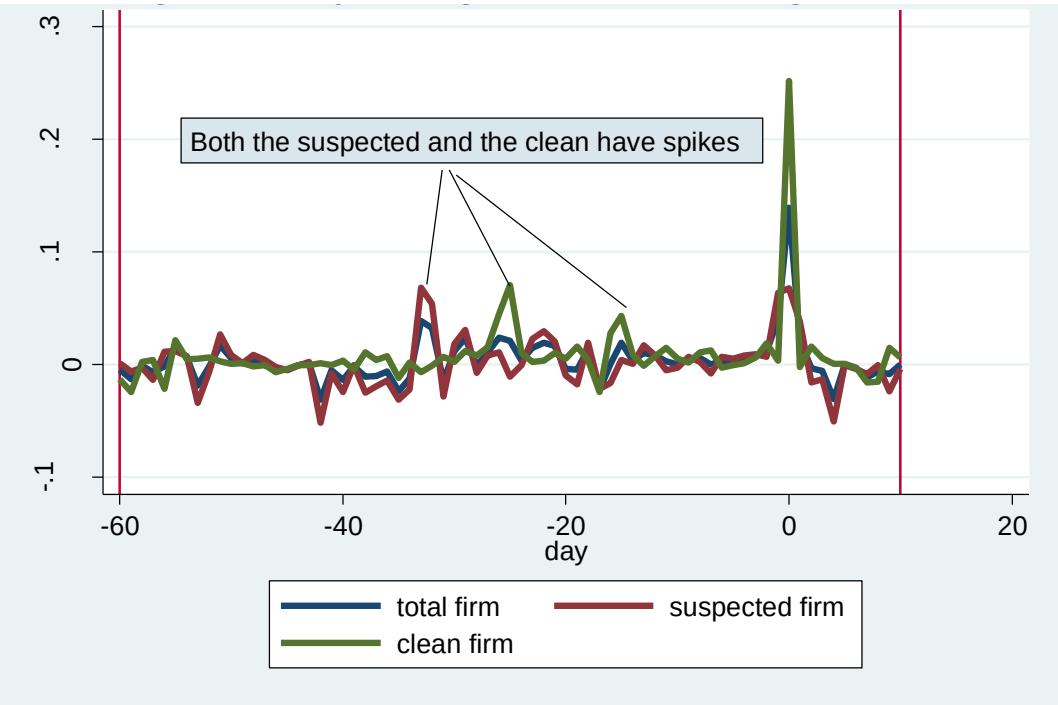
Graph 5.11[16]:



According to Graph 5.11, the err22 has three significant spikes, the highest of which is almost 20%, from day -50 to day -30. This is suspected to have influenced the curve of the total clean firms as can be seen in Figure 5.2. When referred back, the err22 is the Firm T0709. In Filter 2-the news search, public released rumours will be searched to establish more information on this firm.

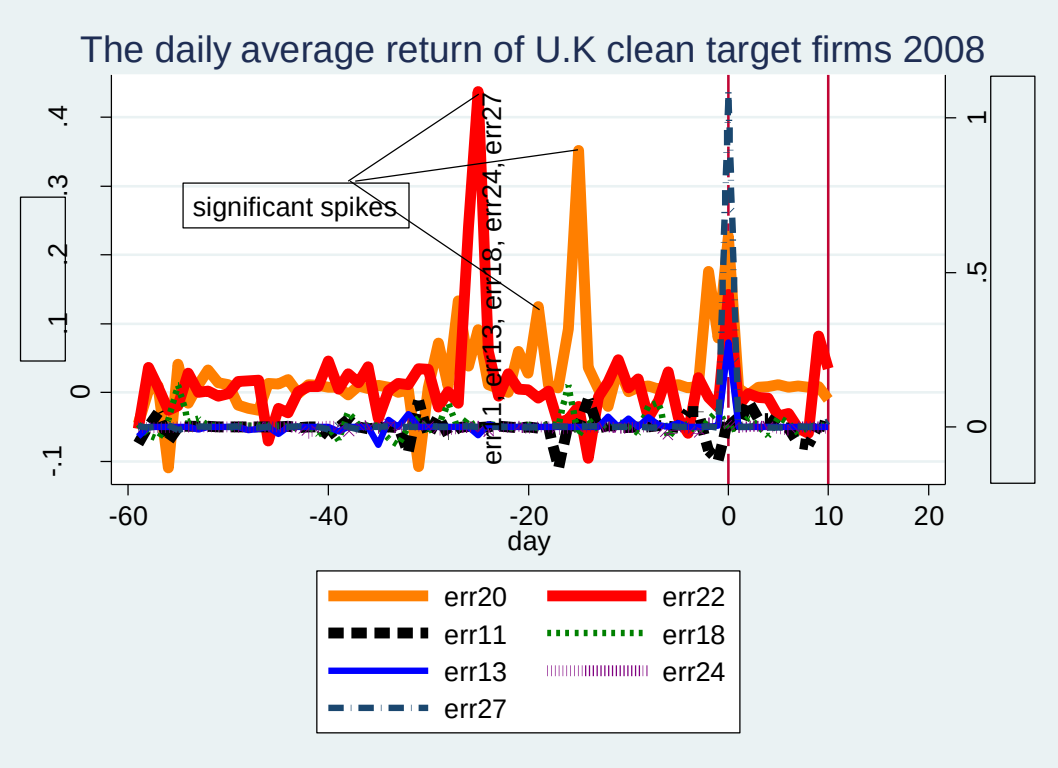
[16] In Graph 5.11, the terminology 'err 'refers to the error term of the specified firms. Here, err22 represents the error term of firm T0709, err11 represents the error term of firm T0707, err18 represents the error term of firm T0708 and err 25 represents the error term of firm T0704. The error term, according to the definition in Chapter 3, is the AR of a specified firm.

Figure 5.3 The daily average return of the U.K target firms 2008



According to Figure 5.3, the suspected firms are experiencing spikes from day -40 to day -30. Nonetheless, the clean firms also have spikes during period -30 to -20 day. The following Graph 5.12 is presented on which all the seven clean firms in the U.K in 2008 are included.

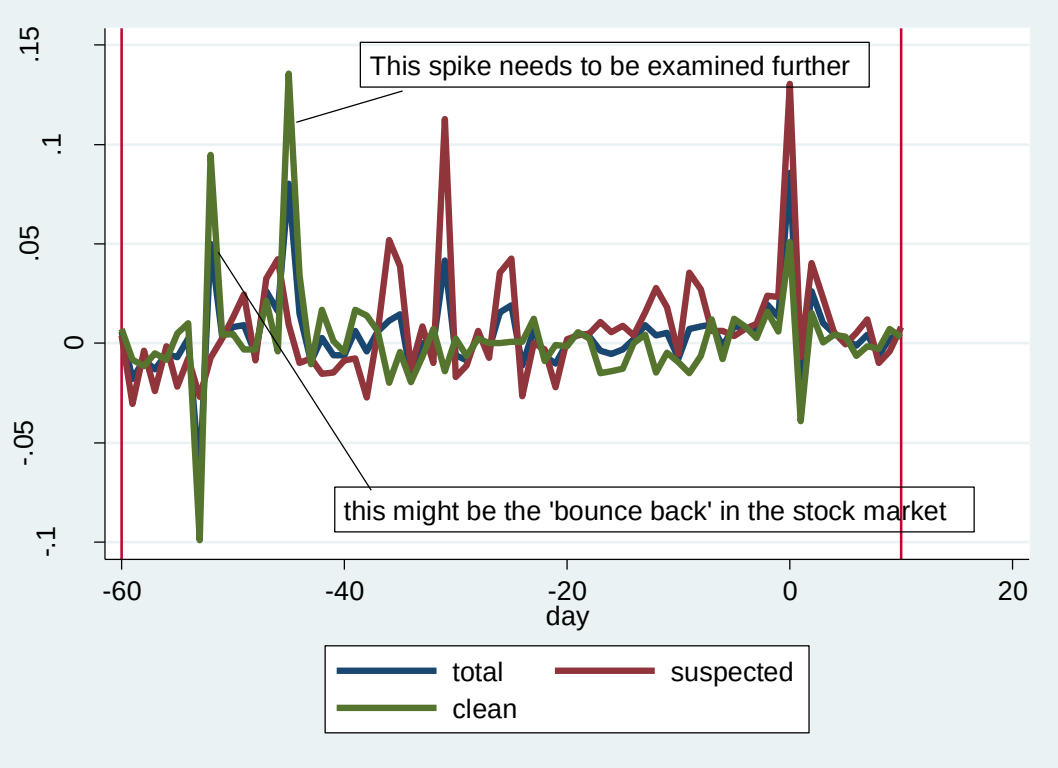
Graph 5.12[17]:



According to Graph 12, both err20 (represented by an orange curve) and err22 (represented by a red curve) have significant spikes prior to the announcement day. Err20 has spikes from day -20 to day -10 while err22 has spikes from day -30 to day -20. As a result, the first spike of the clean firms in Figure 5.3 might be driven by err22 and the second spike of the clean firms might attribute to err20. When referred back, the err20 is the Firm T0814 and the err22 is the Firm T0806. In Filter 2-the news search, public released rumours will be searched to elucidate more information on these two firms.

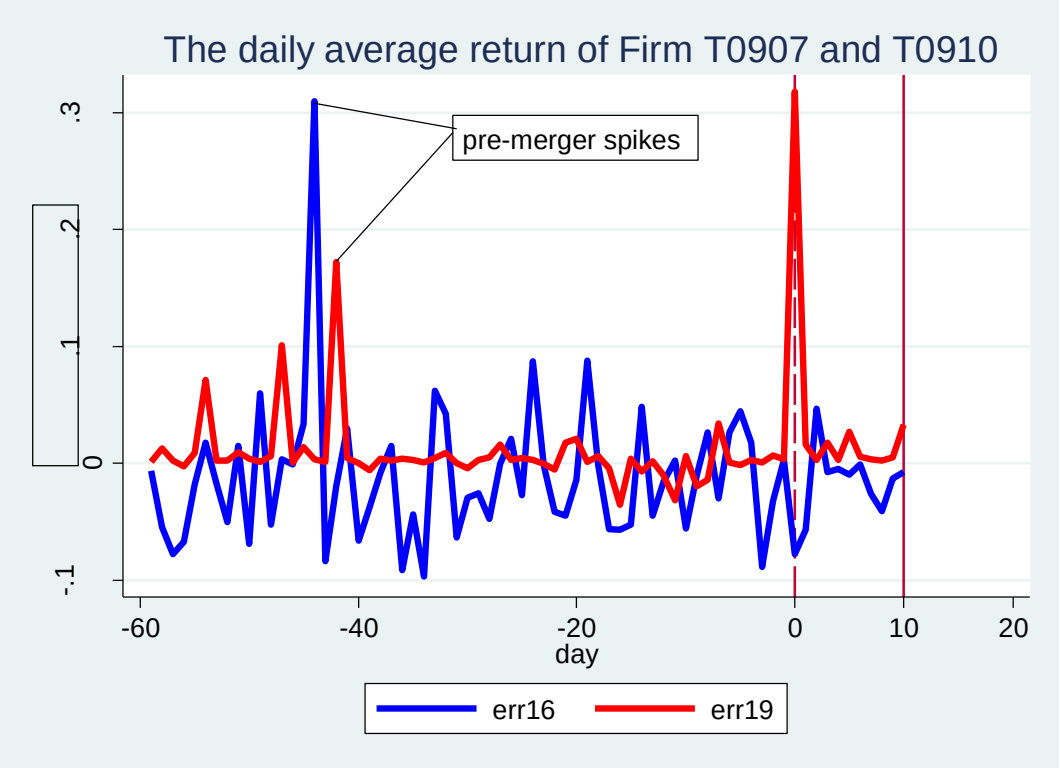
[17] In Graph 5.12, err20 is the error term of firm T0814, err11 is the firm T0818, err13 is the firm T0803, err18 is the firm T0815, err22 is the firm T0806, err24 is the firm T0810 and err27 is the firm T0816.

Figure 5.4 The daily average return of the U.K target firms 2009

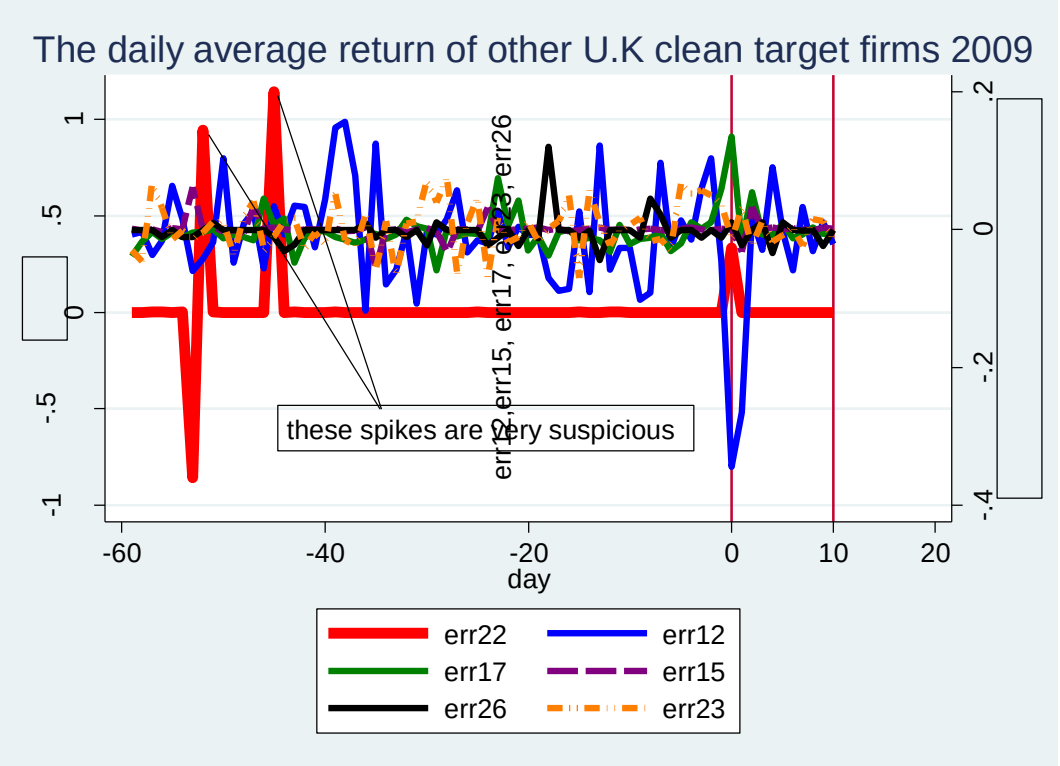


According to Figure 5.4, the curve of suspicious firms has very significant spikes during period from day -50 to day -20. The spike during -40 to -20 is like the 'head and shoulder' shape. On the other hand, there are also three very significant spikes for the clean firms among which two are significantly positive and one is significantly negative. The first positive spike might be a response to previous negative one- the 'bounce back' in the stock market or it can also be suspicious because the insiders might leak negative information before they intend to buy shares. Moreover, there is a second positive spike in about a week's time. Graph 5.13 and Graph 5.14 are presented separately in order to find the reasons for the spikes of the clean firms.

Graph 5.13:



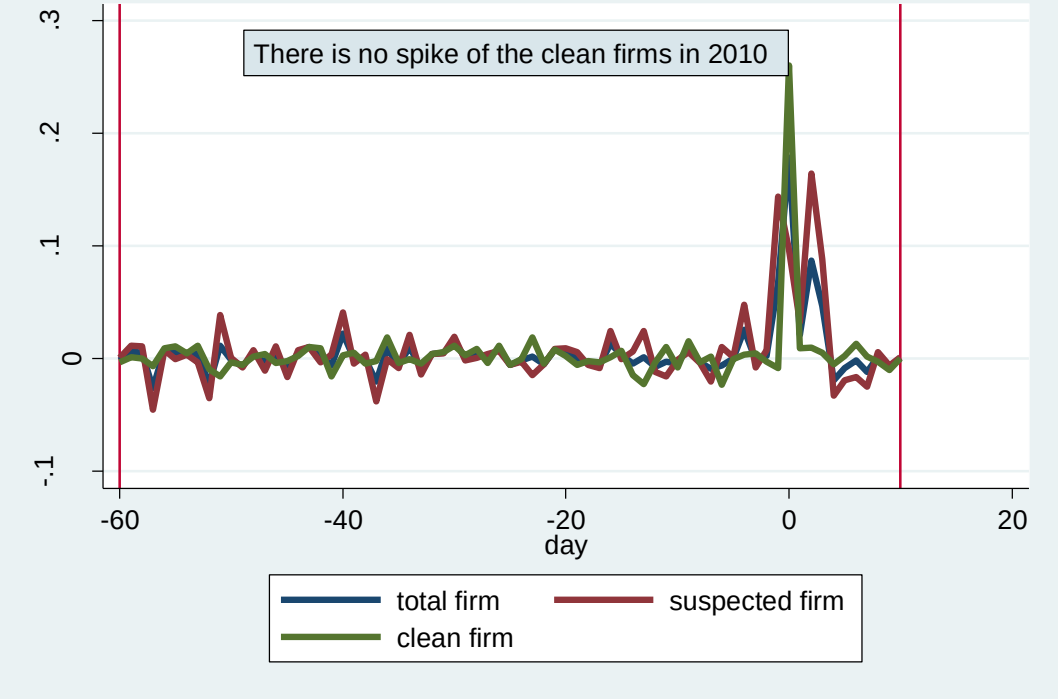
Graph 5.14:



According to Graph 5.13, err16 and err19 have very high spikes prior to the announcement day. Err16 might be the reason for the second significantly positive spike in Figure 5.4. When referred back, the err16 is the Firm T0907. In Filter 2-the news search, public released rumours will be searched to elucidate more information on this firm.

According to Graph 5.14, a very obvious negative-positive pattern is found for err22 (Firm T0912) which is very similar to the pattern of the clean firm in Figure 4. Therefore, the negative-positive pattern of the clean firms in Figure 4 is very likely influenced by Firm T0912. Although sometimes the negative-positive pattern can be concluded as a 'bounce-back' of the stock market, however, it can also be a sign of insider trading due to the reason that the insiders might try to leak negative information to the market to lower the share prices before they intend to buy shares. In Filter 2-the news search, public released rumours will be searched to elucidate more information on this firm.

Figure 5.5 The daily average return of the U.K target firms 2010



According to Figure 5.5, only the curve of the suspicious firms has spikes from -60 day to -40 day and the curve of the clean firms are very stable without any spikes before the announcement day.

Figures 5.11-5.15 show the AR for the U.K target firms from 2006 to 2010 based on Tables 5.14-18 from the market adjusted model.

Figures 5.11: The daily average return for the U.K target firms in 2006 from the market adjusted model

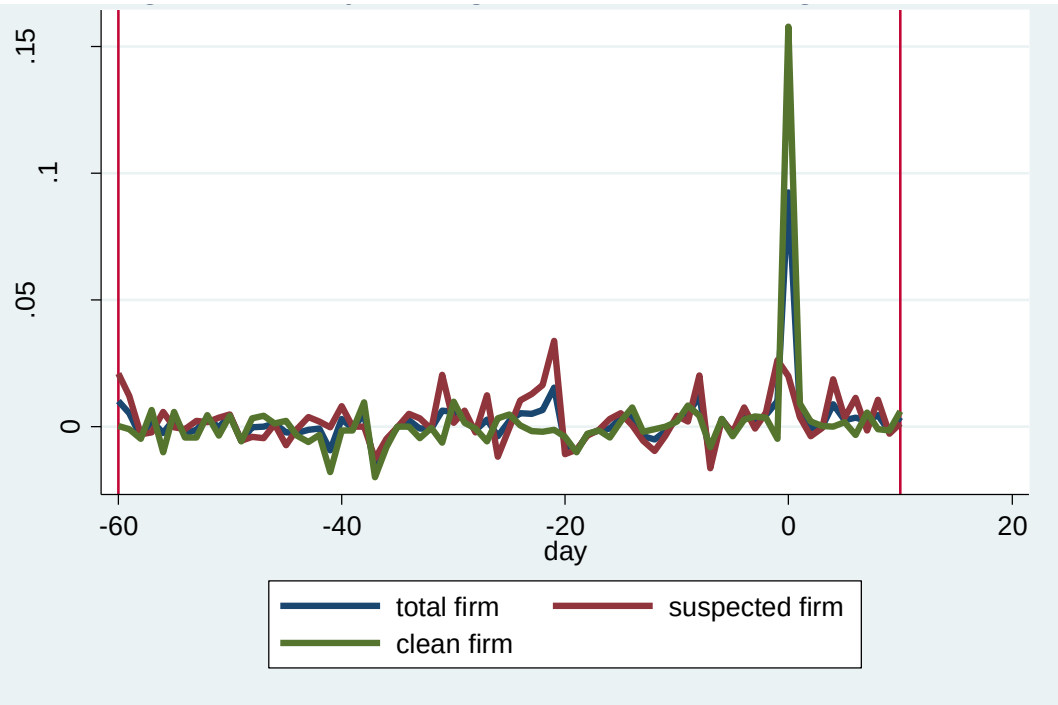
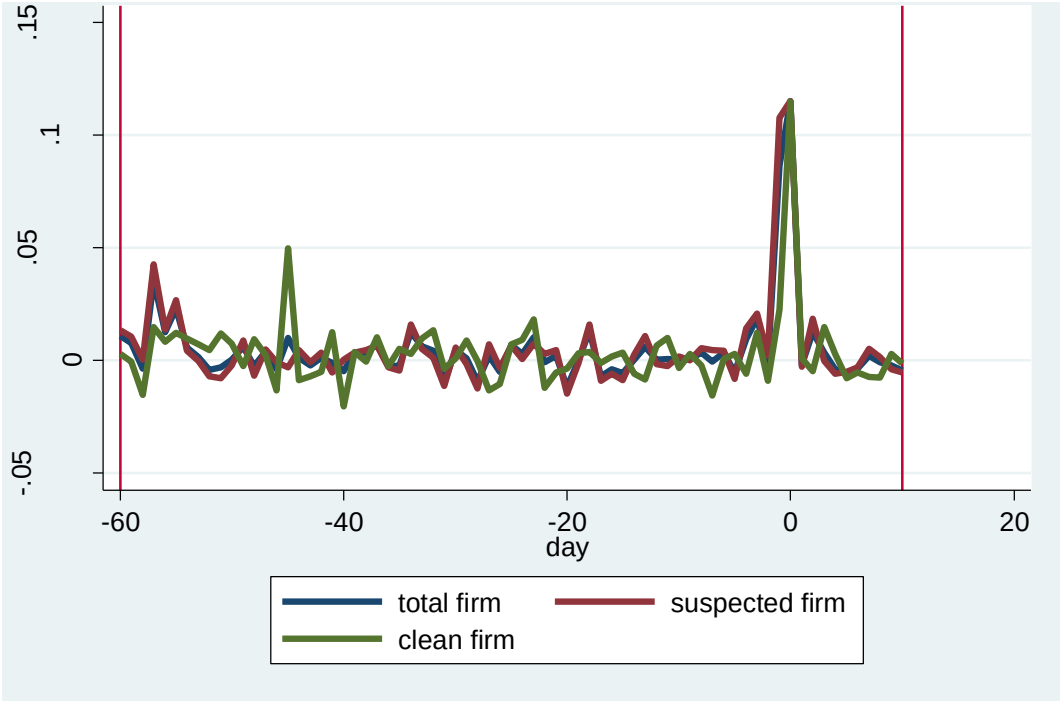
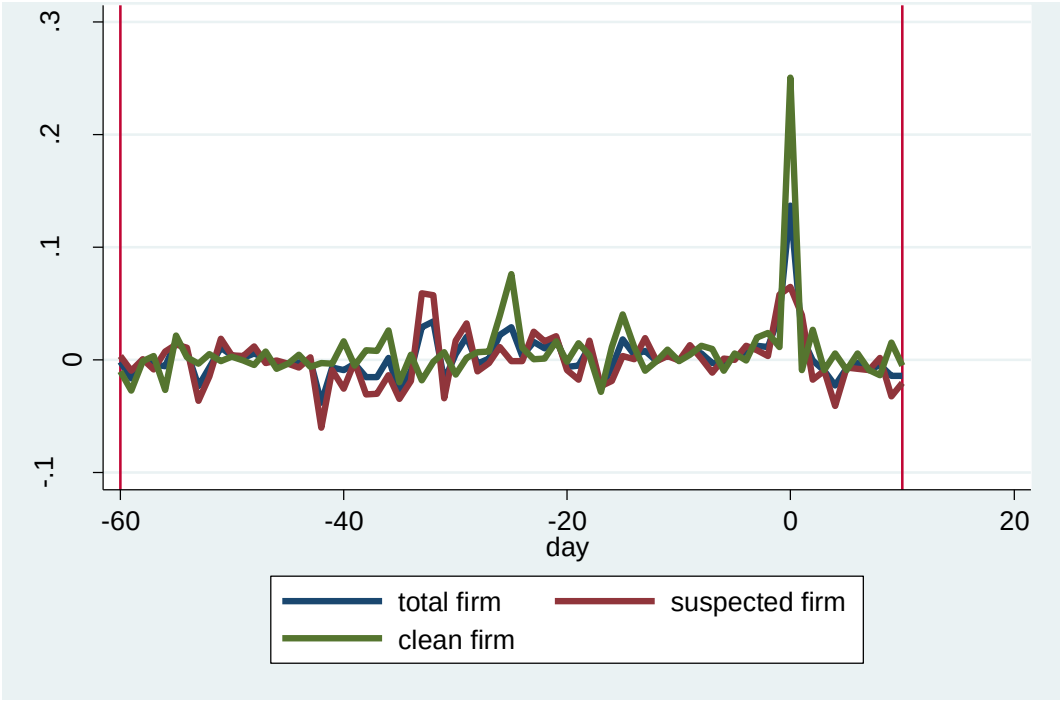


Figure 5.11 is the ARs of the total, the clean and the suspected firms for U.K. 2006. The difference between Figure 5.11 and Figure 5.1 is that Figure 5.11 is based on the market-adjusted model while Figure 5.1 is based on the market model. The tables are in the appendix. When compared with the results from the market model, slight difference in numbers is found because the market-adjusted model has assumptions that $\alpha=0$ and $\beta=1$ while the market model estimates α and β. However, there is no significant statistical difference between the results from the market-adjusted model and from the market model and therefore, Figure 5.11 is visually identical with Figure 5.1.

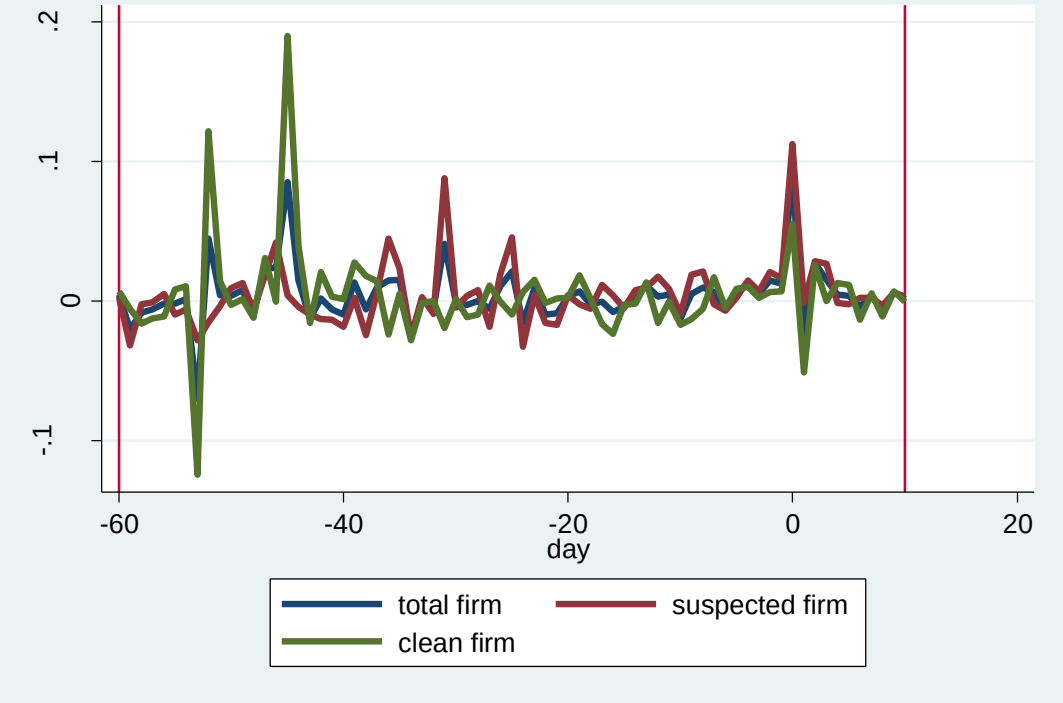
Figures 5.12: The daily average return for the U.K target firms in 2007 from the market adjusted model



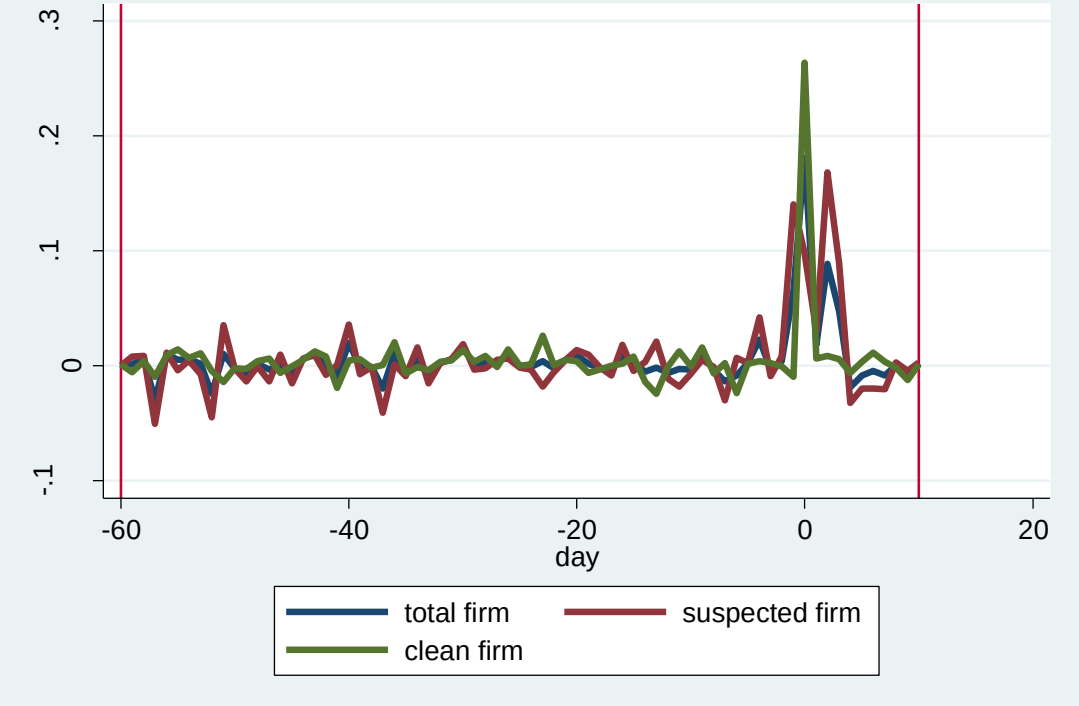
Figures 5.13: The daily average return for the U.K target firms in 2008 from the market adjusted model



Figures 5.14: The daily average return for the U.K target firms in 2009 from the market adjusted model



Figures 5.15: The daily average return for the U.K target firms in 2010 from the market adjusted model



Although Tables 5.14-18 in the appendix seem different from the Tables 5.7-12, according to Figures 5.11-5.15, the results from the market-adjusted model are

identical with those from the market model. As a result, the discussion is omitted for the results from the market-adjusted model.

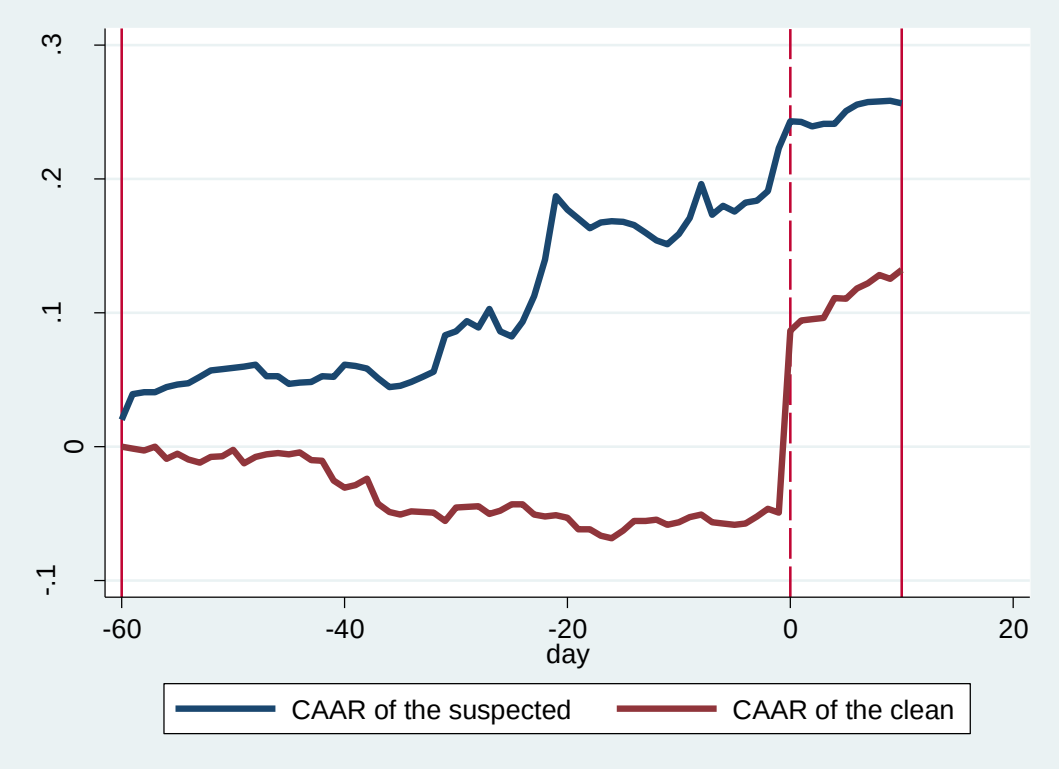
Table 5.19: The codes of the clean, suspected and suspected after the plotting firms after the dummy variable approach in the U.K from 2006 to 2010

2006						
The code of the clean firms			The code of the suspected firms			The suspected after the plotting
T0603	T0613	T0619	T0601	T0610		None
T0605	T0614		T0602	T0611		
T0606	T0615		T0604			
T0609	T0616		T0607			
T0612	T0617		T0608			
2007						
The code of the clean firms			The code of the suspected firms			The suspected after the plotting
T0704			T0701	T0710	T0715	T0709
T0707			T0702	T0711	T0716	
T0708			T0703	T0712		
			T0705	T0713		
			T0706	T0714		
2008						
The code of the clean firms			The code of the suspected firms			The suspected after the plotting
T0803	T0816		T0801	T0811		T0806
T0804	T0818		T0802	T0812		T0814
T0808			T0805	T0813		
T0810			T0807	T0817		
T0815			T0809			
2009						
The code of the clean firms			The code of the suspected firms			The suspected after the plotting
T0903	T0911		T0901	T0914		T0907
T0904	T0916		T0902	T0915		T0912
T0905			T0906			
T0909			T0908			
T0910			T0913			
2010						
The code of the clean firms			The code of the suspected firms			The suspected after the plotting
T1001	T1012		T1002	T1011		None
T1004	T1013		T1003	T1015		
T1006	T1014		T1005	T1017		
T1008	T1016		T1007	T1018		
T1009			T1010			

Section 5.3.3 The analysis of the CAARs after the dummy variable approach for the targets

The previous literature assumes that if there are no unusual price movements prior to the announcement date, the CAAR would be expected to fluctuate randomly about zero. However, if there is possible existence of insider trading, one would expect a build up in the CAAR (Keown and Pinkerton, 1981). Figures 5.16-5.21 give the CAAR of both the suspected and clean firms in the U.K from 2006 to 2010 after the dummy variable approach.

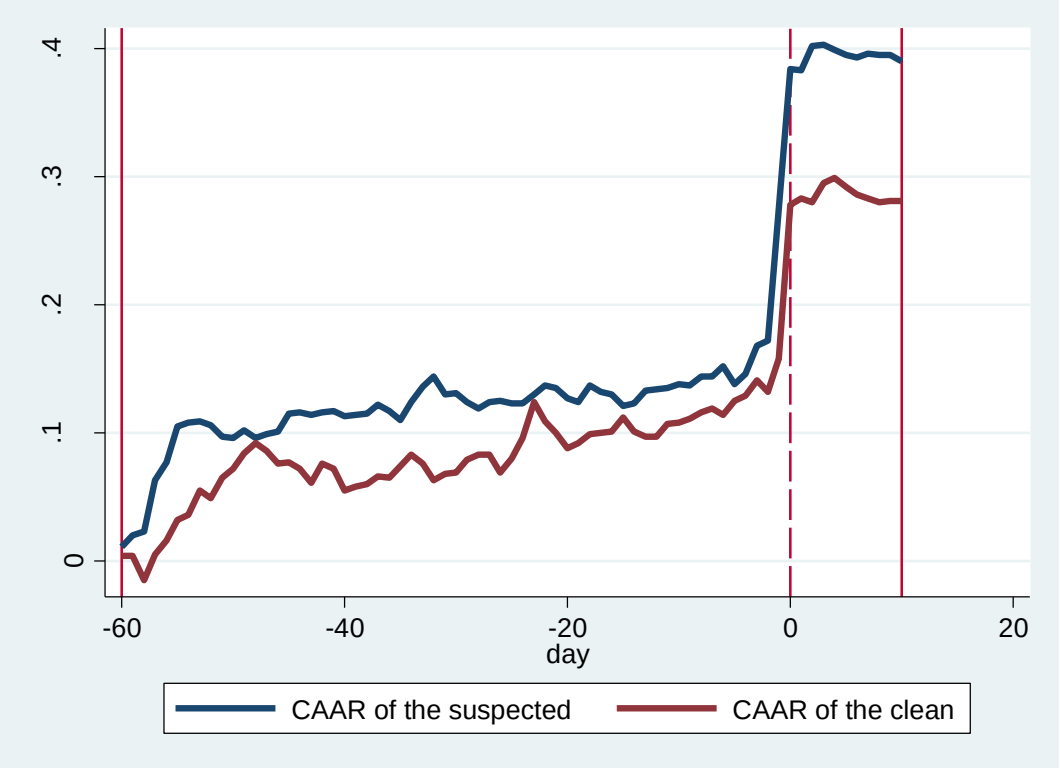
Figure 5.16: The CAAR of the suspected and clean U.K. target firms in 2006



According to Figure 5.16, in 2006, before the announcement day, the CAAR of the suspected firm are substantially above that of the clean firms. From day -60 to day +10, the CAAR of the suspected firms has a positive trend from 0% to about 25% indicating that suspected firms are getting increasingly positive cumulative abnormal returns all the way through the event window. On the other hand, the CAAR of the clean firms are experiencing negative cumulative abnormal returns of about -5% from

day -60 to day 0. On day 0, the CAAR of the clean firms increases dramatically to 10%. There is no trend of a buildup in the CAAR of the clean firms.

Figure 5.17: The CAAR of the suspected and clean U.K. target firms in 2007



In 2007, from -60 day to +10 day, both the CAAR of the suspected firms and that of the clean firms start to increase gradually from -60 day. The difference between them is that the CAAR of the suspected firms is above that of the clean firms indicating a larger return for the suspected firms than the clean firms. An obvious trend of CAAR buildup can be seen for both the suspected and clean. This is an indication that after the first filter, the clean firms are not yet absolutely clean.

Figure 5.18: The CAAR of the suspected and clean U.K. target firms in 2008

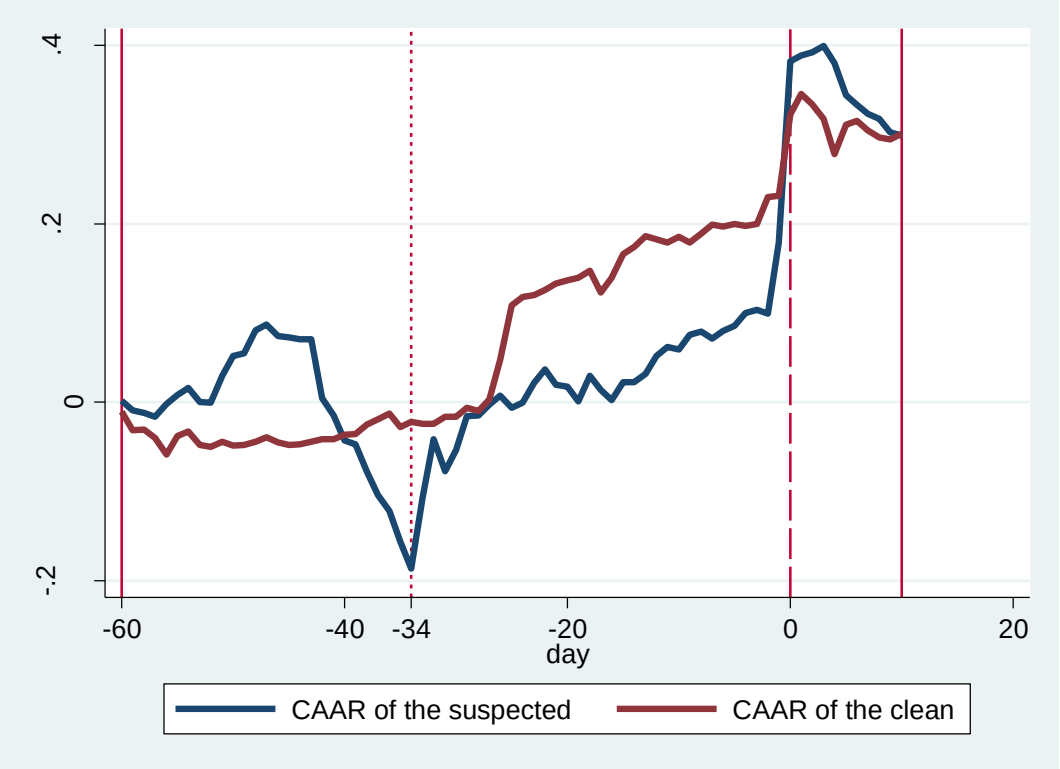
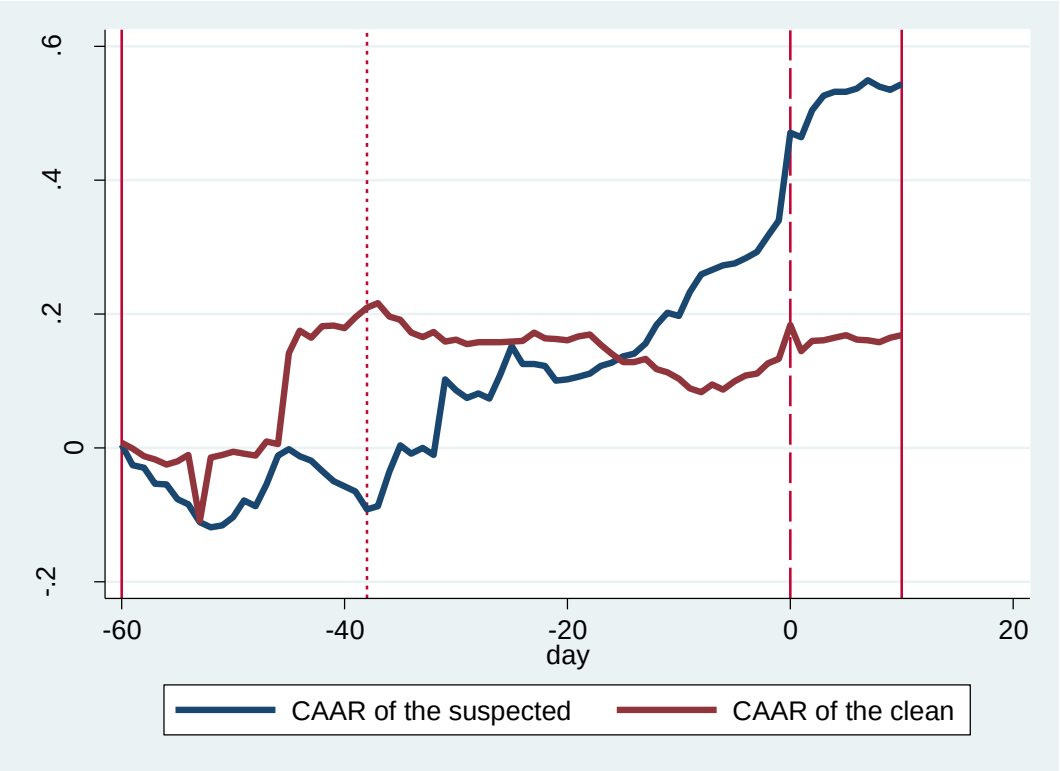


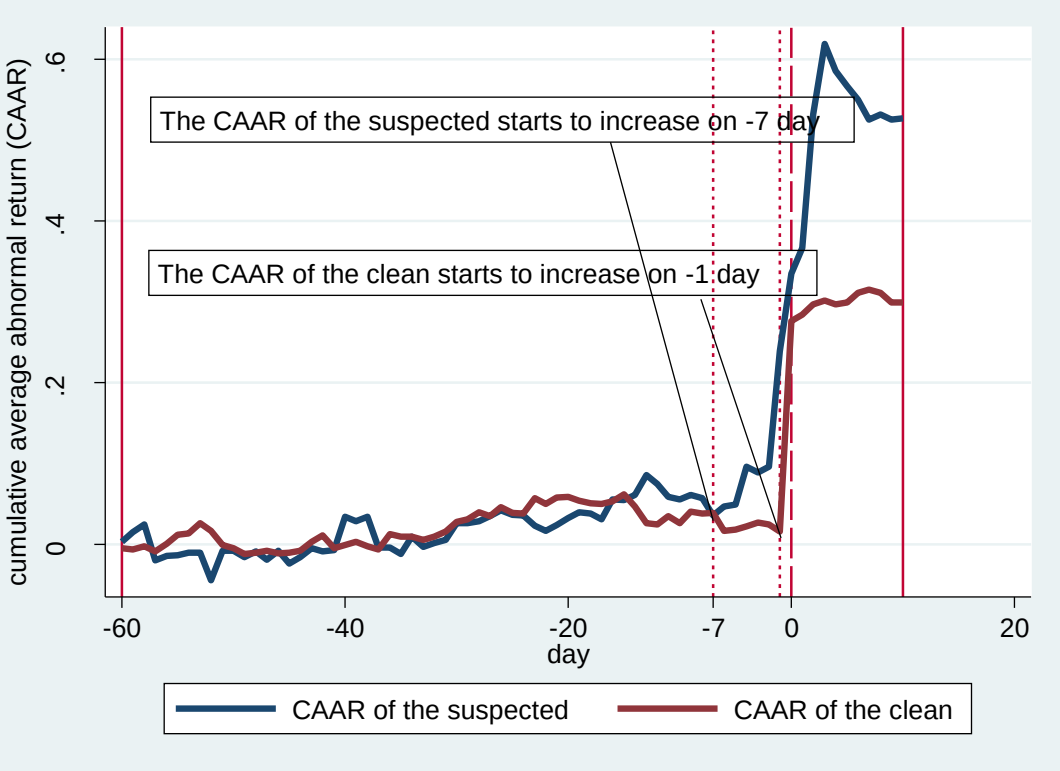
Figure 5.18 is the CAAR for both the suspected and clean firms relative to the merger announcement. For the clean firms, the increasing trend in the CAAR is not perceivable before day -34. However, after day -34, the trend becomes pronounced. During a period from -34 day to -3 day, the CAAR of the clean firms has increased from 0% to 20%. For the CAAR of the suspected firms, it decreases sharply to almost -20% before -34 day. From -34 day onwards, an obvious increasing trend in the CAAR is observed. The CAAR of the suspected firms has increased from -20% on day -34 to 10% on day -3. This is a further indication that after the first filter, the clean firms are not yet absolutely clean.

Figure 5.19: The CAAR for the suspected and clean U.K. target firms in 2009



In 2009, the CAAR of the suspected firms has some fluctuations before the day -40. After -40 day, an increasing trend of buildup in the CAAR is observed. The CAAR of the suspected firms is increasing considerably from -10% on day -40 to 40% before the merger announcement, though with occasional dips. On the other hand, the CAAR of the clean firms increases dramatically before -40 day to about 20%. After this day, the CAAR of the clean firms decreases slowly. Before the announcement day, it keeps a gain of 20%. According to Figure 19, there is a further indication that after the first filter, the clean firms are not yet absolutely clean.

Figure 5.20: The CAAR for the suspected and clean U.K. target firms in 2010



In 2010, before the announcement day, the CAAR of the suspected firms and of the clean firms go randomly about 0% and the CAAR of the clean firms is slightly above that of the suspected firms. However, the CAAR of the suspected firms is observed an increasing trend from day -7 onwards while the CAAR of the clean firms has a CAAR buildup on day -1. The result from the dummy variable approach in 2010 shows consistence with the previous assumption-there is less a problem of insider trading in 2010 than in other years, at least in terms of the period prior to day -7.

Section 5.3.4 Results of the first filter-the dummy variable approach for the bidders

Section 5.3.4 is the analysis of the bidders in the U.K from 2006 to 2010. Tables 5.20-24 shown in the appendix are the results of the AR and CAAR for the bidder firms in the U.K from 2006 to 2010. Figures 5.21-5.25 give the AR for the U.K bidders from 2006 to 2010 from the market model based on Tables 5.20-24. This thesis focuses mainly on the targets, in part because initial results suggest that there seems less of

interest to analyse in the bidders, and therefore, for the bidders, only the first filter is applied.

Figure 5.21 The daily average return for the U.K bidder firms 2006

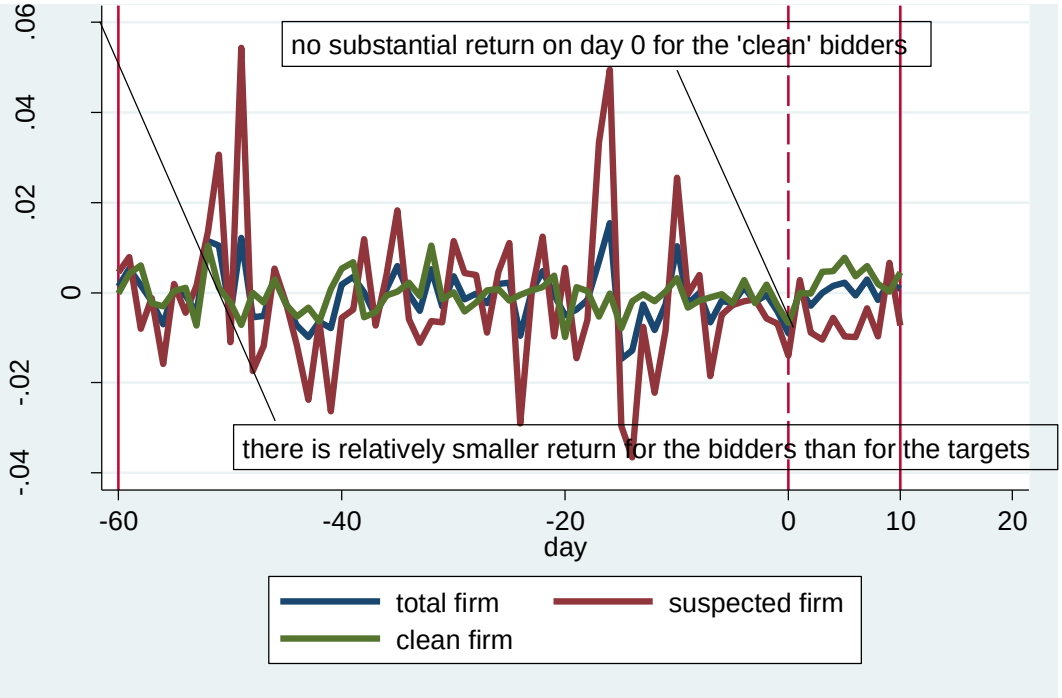


Figure 5.22 The daily average return for the U.K bidder firms 2007

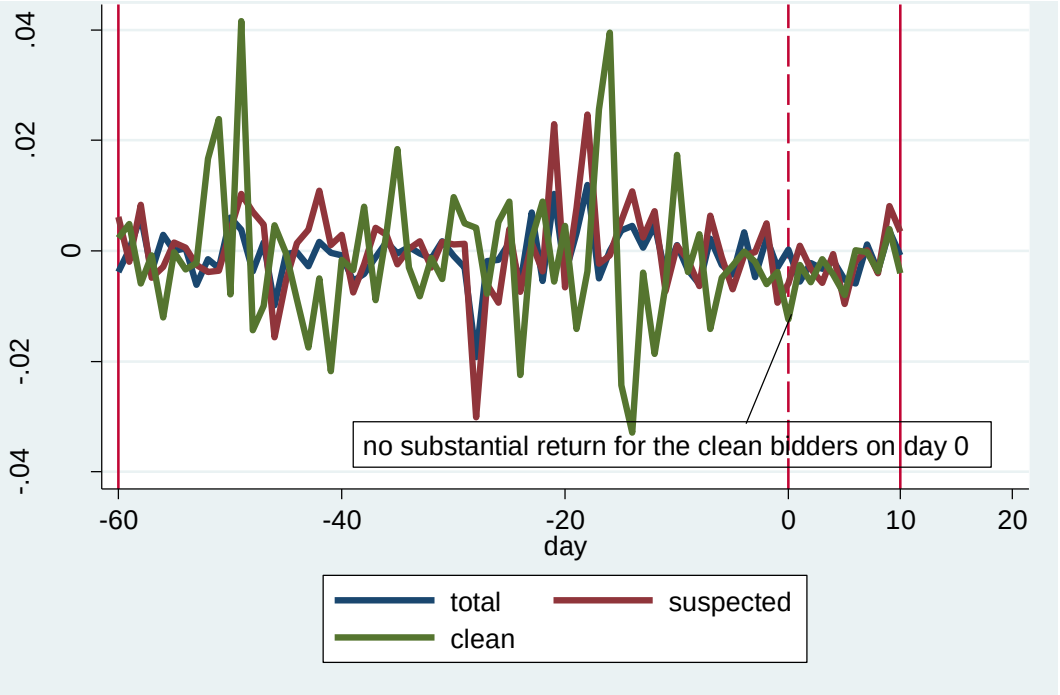


Figure 5.23 The daily average return for the U.K bidder firms 2008

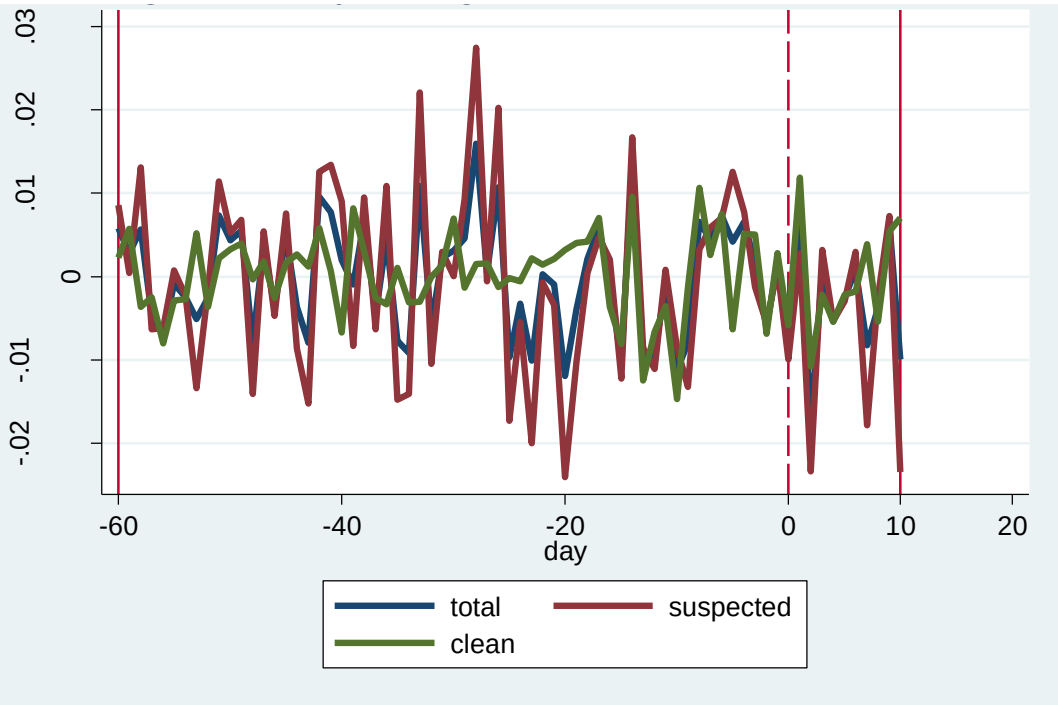


Figure 5.24 The daily average return for the U.K bidder firms 2009

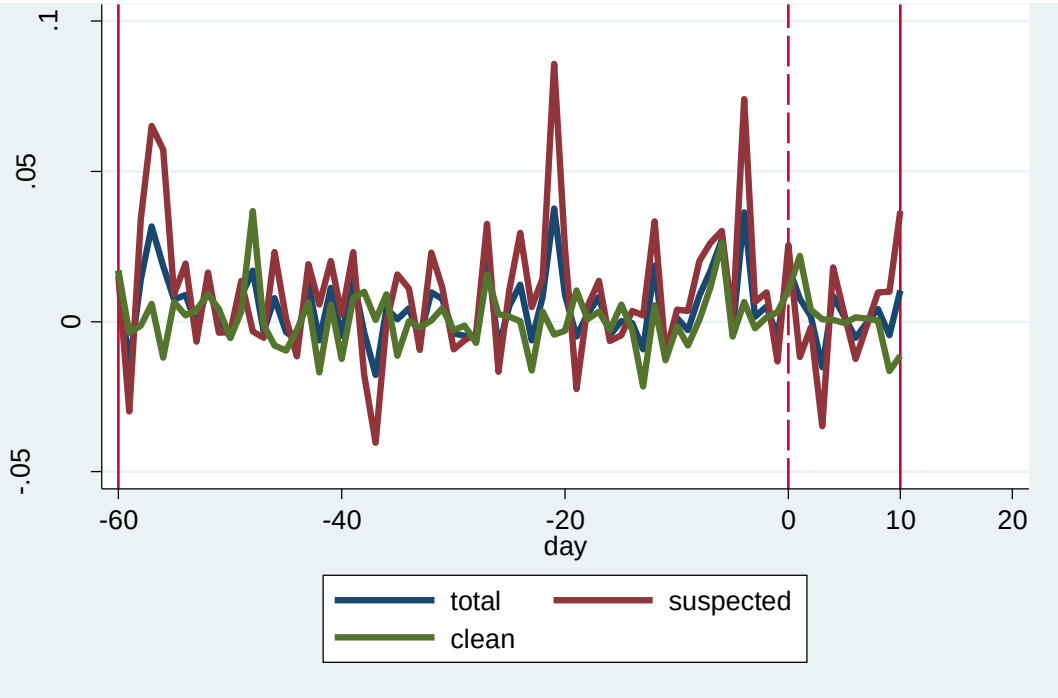
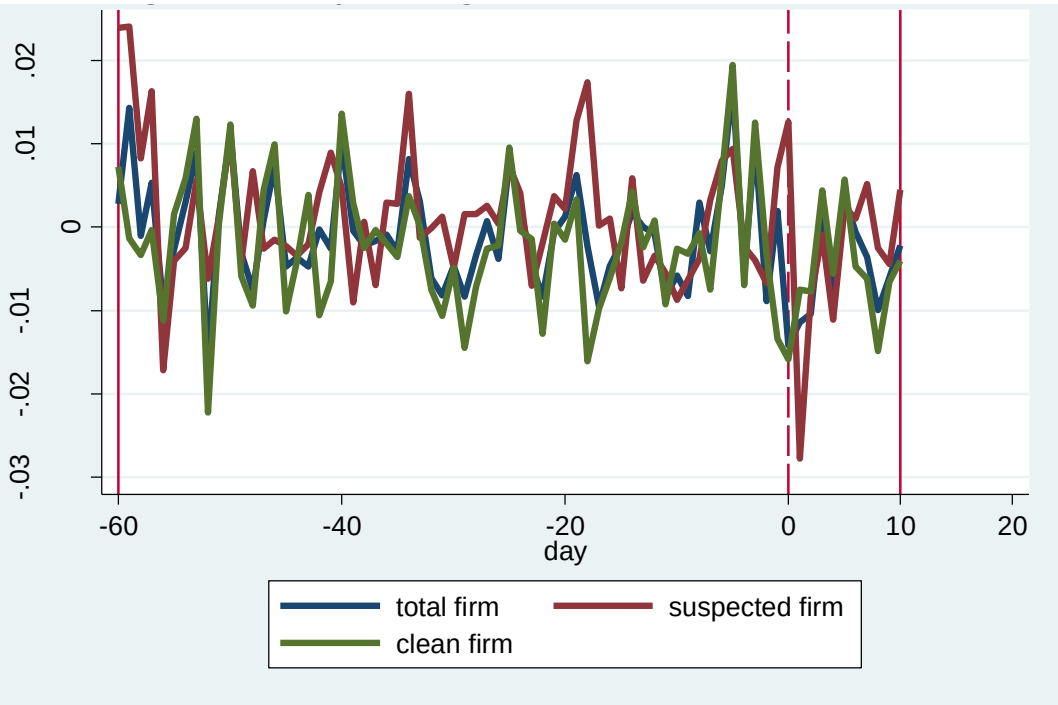


Figure 5.25 The daily average return for the U.K bidder firms 2010



According to Figures 5.21-5.25, it appears to be the case that the bidders are not experiencing the day 0 abnormal return run-up as the targets. Furthermore, the abnormal returns the bidders get are much lower than those the targets get. That suggests that the gains are asymmetric and largely accrue to the target firms. It is also consistent with, although not proof of, the hypothesis that the bidders are paying too much for the target firms. Apart from this, there is no obvious pattern for the clean, suspected and total bidder firms.

Tables 5.30-34 in the appendix give the results of the average abnormal return (AR) and cumulative average abnormal return (CAAR) of the U.K bidder firms from 2006 to 2010 based on the market adjusted model. Although Tables 5.30-34 seem different from the Tables 5.20-24, but the graphs from the market-adjusted model are identical with those from the market model. As a result, the discussion is omitted for the results from the market-adjusted model.

Section 5.3.5 The CAAR analysis after the first filter for both the targets and bidders

Section 5.3.5 is the analysis of the CAAR for both the targets and bidders after the first filter-the dummy variable approach. Here, the diagrams for both the targets and the bidders are plotted together to see if there are some pre-merger run-ups in the CAARs. Figures 5.26-5.30 give the CAAR of the U.K targets and bidders from 2006 to 2010.

Figure 5.26

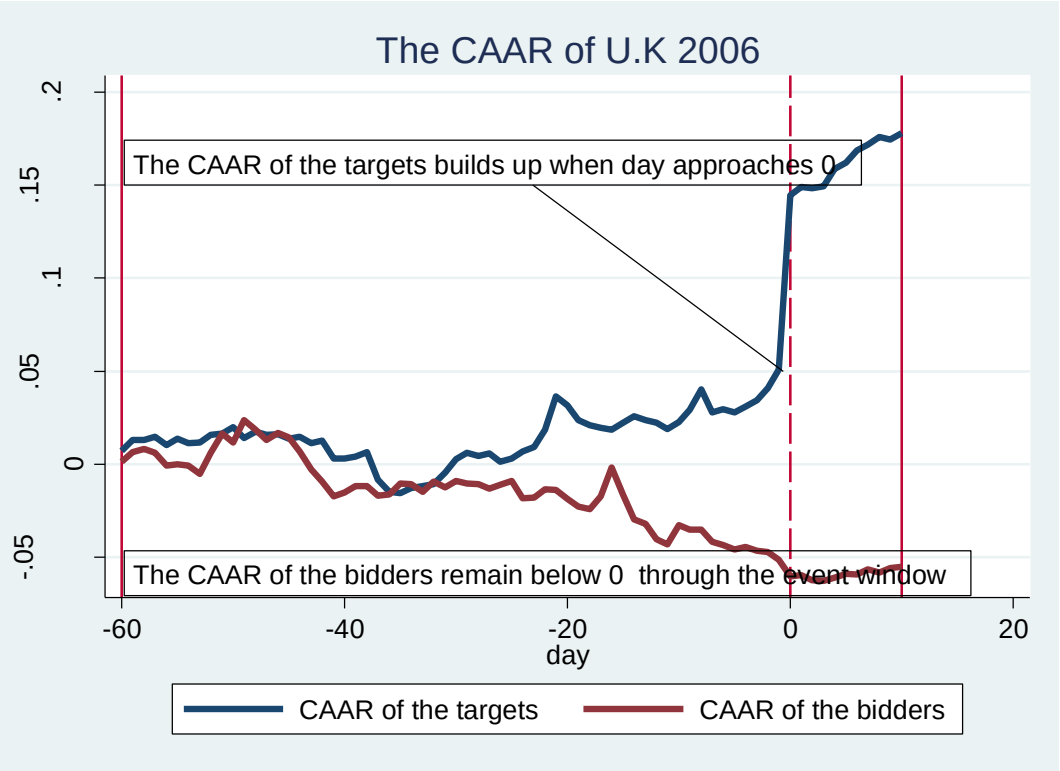


Figure 5.27

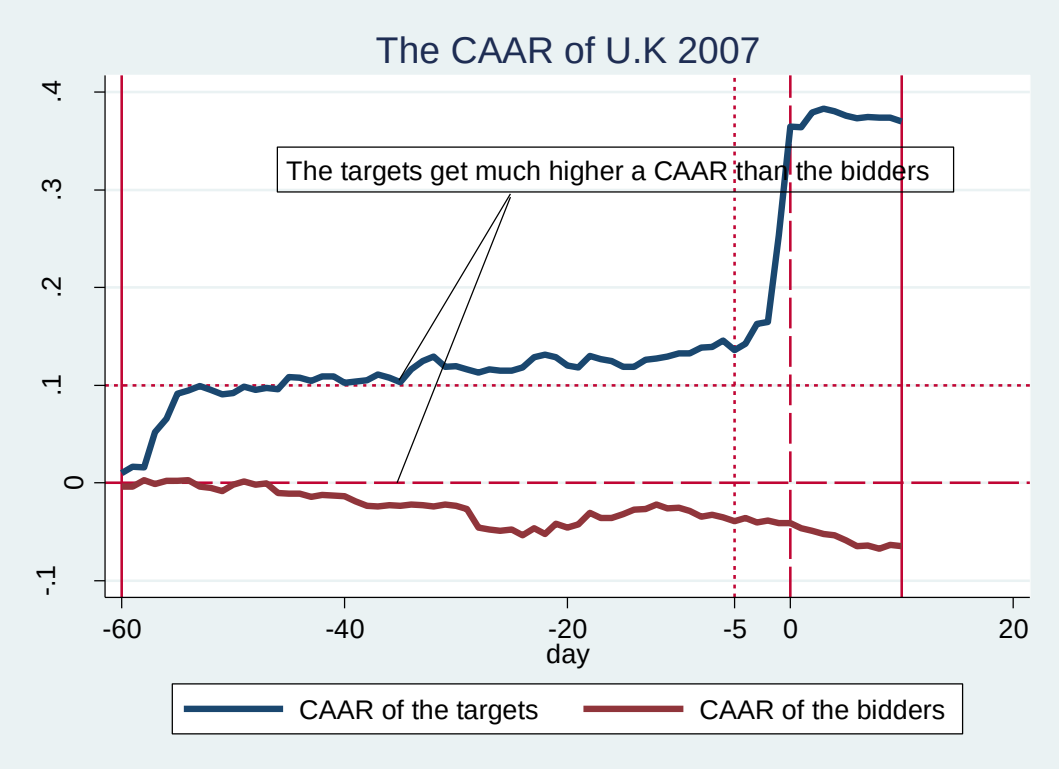


Figure 5.28

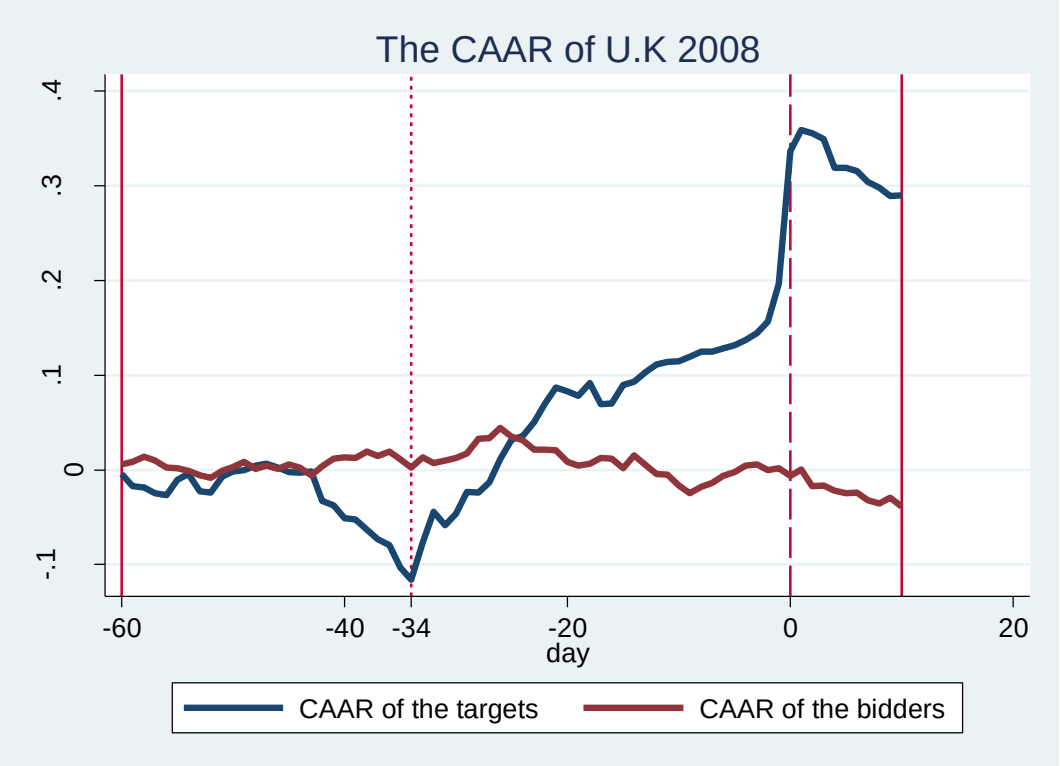


Figure 5.29

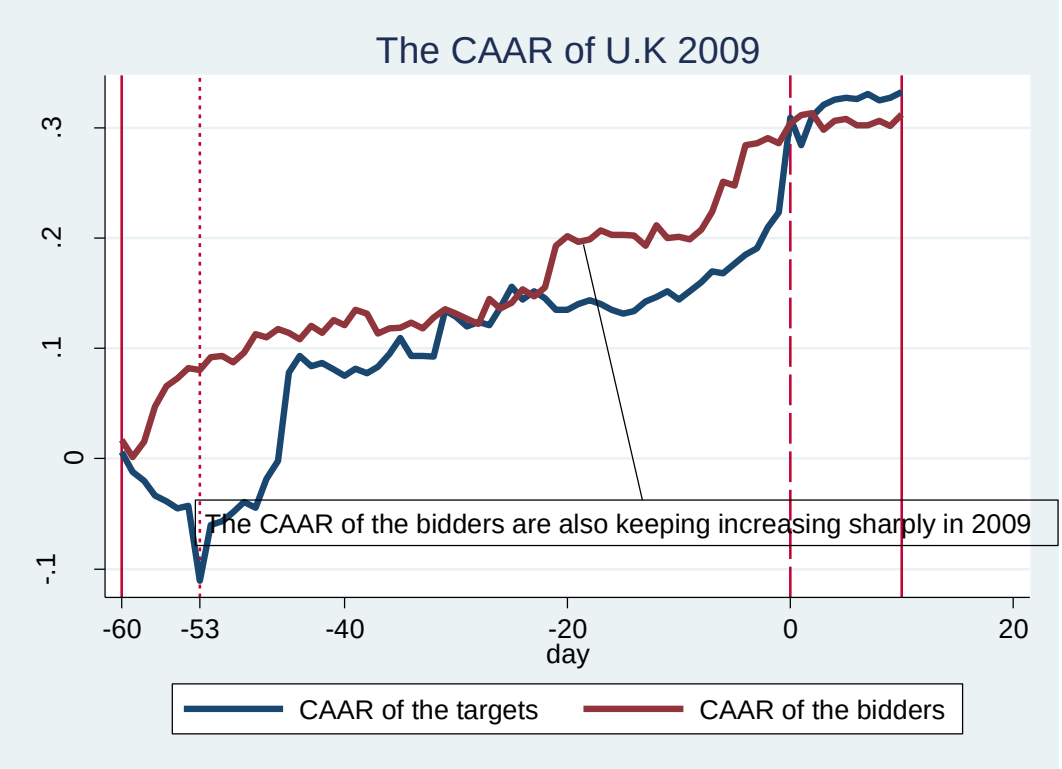
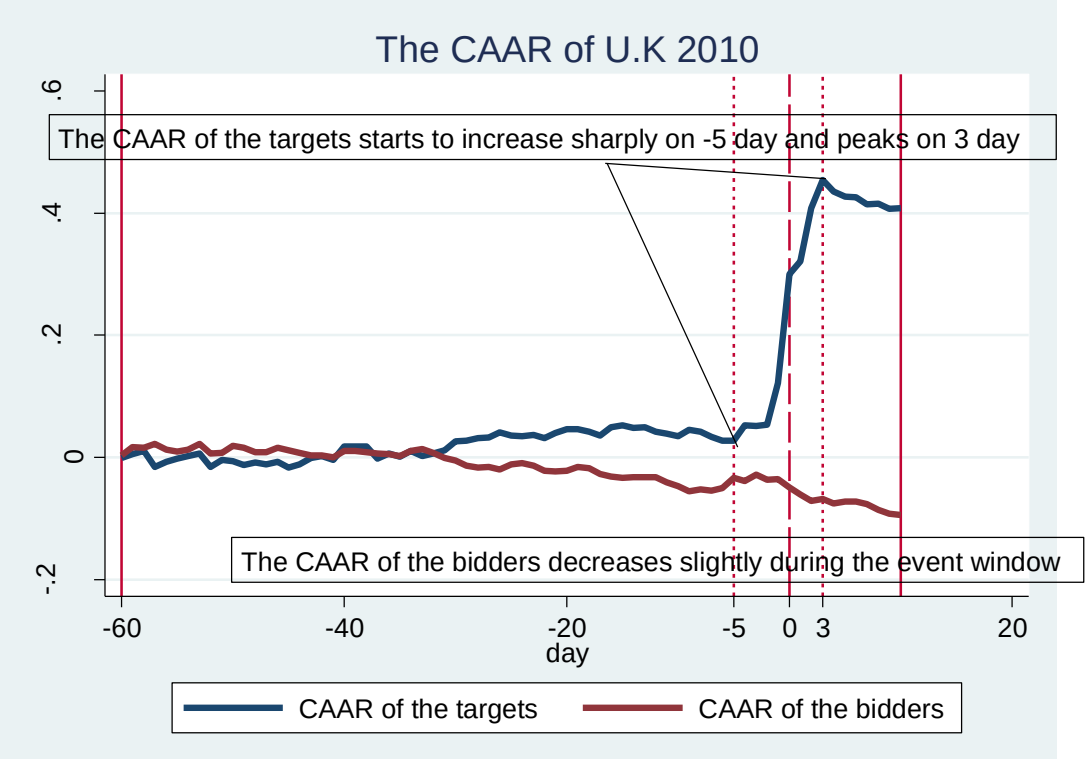


Figure 5.30



According to Figure 5.26-5.30, generally, the CAARs for the targets from 2006 to 2010 are upward sloping while for the CAARs of the bidders, there is a hint of them being downward sloping. For years 2006 and 2010, the CAARs of the targets have an upward trend from day -60 to day 0, and then increase very sharply on and after the announcement day. In 2006, the CAAR keeps on increasing to about 20% while in 2010, the CAAR increases to about 40%. In 2007, the CAAR for the targets leaps to 10% during the first ten days of the event window (from -60 day to -50 day), and then keeps on fluctuating around 10% until day 0. From day 0 onwards, the CAAR for the targets increases sharply to about 40%. In 2008, the CAAR for the targets remains stable from day -60 to day -40 and it decreases rapidly to -10% and from day -30 onwards, the CAAR for the targets begins to increase. It starts a rapid increase on day -2 and from 0 day onwards, the CAAR for the targets leaps rapidly to approximately 40%. In 2009, it is notable that the CAAR for the bidders are not like those in the other years which are generally stable but slightly downward sloped. Instead, the CAAR for the bidders in 2009 keeps on increasing during the event window and reaches 30% in the end. On the other hand, the CAAR for the targets decreases to -10% from day -60 to day -50 and then begins to increase. It is possible that the result may be attributed to the economic crisis which has a disturbance to the pattern of the CAAR from 2007 to 2009. But it may also be unique to this set of firms.

Section 5.3.6The news search before the announcement date

In reality, information can be gathered from a wide variety of resources, such as business newspaper, TV programs, Internet websites and so on. The possible link between insider trading and the publication of inside information has been recognized in Hirshleifer (1971) and Fama and Laffer (1971). Those who possess privileged information have an incentive to take market positions on the basis of their information and then announce their information publicly. This issue is challenging to investigate empirically because isolating trading based on private information is difficult. In order to support the dummy variable approach, for each target firm, I used Nexis to search for the possible rumours as well as the directors' trading on the shares before the announcement date. Nexis is one of the world's largest online database services. It contains thousands of publications which provide extensive sources of information in the areas of law, news, business, technology and other

subjects.[18] I searched all English news world-wide. Tables 5.35-39 illustrate the public information leakage for each target firm in the U.K from 2006 to 2010. The results of the news search mainly suggest that 1) there is no evidence of director's trading affecting the abnormal price movements of the targets. 2) For some targets, for example Firm T0601, the public news leakage of the potential takeover of the target is possibly influencing the abnormal price movements. According to the news search, Firm T0601 confirmed that it was in preliminary talks to sell the company 9 days before the announcement. On day -8, the dummy variable approach suggests an abnormal return, and this might due to the rumour released one day before.

Table 5.35: The firms' names and the days on which the firms have abnormal returns in the U.K 2006: Firms T0601-T0619[19]

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
T0601	-8 day	-7 day	None
		-9 day	
T0602	-21 day	-29 day	None
T0615	+4 day	None	-13 day
T0604	-6 day	None	None
T0605	+6 day	None	None
T0606	None	-43 day	None
T0607	-31 day	None	None
T0608	-23 day	None	None
	-22 day		
	+7 day		
T0609	None	None	-6 day
			-19 day
T0610	-32 day	-41 day	None
	-30 day		
	-29 day		
	-9 day		
T0611	-22 day	None	None
	-1 day		
Firms with neither abnormal return nor public rumours: T0612, T0613, T0614, T0603, T0616, T0617, T0618, T0619			

[18] http://www.smccd.net/accounts/brenner/lsci105/lexisdef.html

[19] The firms with no entry are firms for which no rumours or director's trading is found and no day on which abnormal return is detected.

The dummy variable approach suggests that on day -8, Firm T0601 is experiencing abnormal return, but since public rumours are found released on day -7 and day -9, the day -8 abnormal return may be driven by the -9 day's information leakage. Moreover, for Firm T0602, the news leakage is found on day -29 while the abnormal return is on day -21, and for Firm T0610, the public rumour is found on -41 and thereafter on day -32, day -30 and day-29, the abnormal returns are found. The above findings might be the evidence of the long, and somewhat delayed, effect of the public information leakage. These findings do raise questions about market efficiency, where an efficient market should process and adapt to information immediately, but nonetheless this may help explain the abnormal trading without recourse to explanations of insider trading. On the other hand, for many firms such as Firm T0604, Firm T0607, Firm T0608 and so on, although no public rumour of potential takeover is detected, they are still experiencing abnormal returns and therefore, insider trading is suspected.

Table 5.36: The firms' names and the days on which the firms have abnormal returns in the U.K 2007: Firm T0701-T0716

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
T0701	-34 day	None	-58 day
	-33 day		
T0702	-2 day	None	None
	-1 day		
	0 day		
T0703	-37 day	None	None
	-35 day		
	-23 day		
	-22 day		
T0705	-1 day	None	None
T0706	-31 day	-1 day	None
	-1 day		
	0 day		
T0709	None	-6 day	None
T0710	-8 day	-10 day	None
	-4 day		
	-3 day		
	0 day		
T0711	-1 day	-1 day	None
	0 day		
T0712	-13 day	-18 day	None

T0713	-1 day	None	None
T0714	-57 day	None	None
	-56 day		
	-55 day		
T0715	-34 day	-4 day	None
T0716	-48 day	-6 day	None
		-7 day	
Firms with neither abnormal return nor public rumours: T0704, T0707, T0708			

According to Table 5.36, there is only a rumour release on day -6 which would by no means affect the stock prices of the Firm T0709 from -50 to -30 day. As a result, Firm T0709 (mentioned as suspected in Graph 5.11) is also suspected to have been involved in insider trading. In addition, it is also noticeable that on -5 day, there is a negative spike in the AR of the Firm T0709 (see Graph 5.11). Of course it is not inconceivable that the negative spike is associated with insider trading in that the firm, or someone within the firm, leak negative news the day before they intend to buy shares. This pushes the price of shares down and increases their subsequent gains.

Table 5.37: The firms' names and the days on which the firms have abnormal returns in the U.K 2008: Firm T0801-T0818

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
T0801	-38 day	None	None
	-19 day		
	-12 day		
T0804	+1 day	None	None
	+2 day		
	+3 day		
	+4 day		
T0805	-18 day	-10 day	-5 day
		-11 day	
T0806	None	-36 day	None
T0807	-23 day	None	None
	-22 day		
T0808	+1 day	None	-2 day
	+5 day		
T0809	-33 day	None	None
	-32 day		
	-1 day		
T0811	-1 day	-3 day	-45 day
T0812	-22 day	None	None
	-21 day		

	-20 day		
T0813	-9 day	None	None
	+1 day		
	+5 day		
	+9 day		
T0817	-48 day	None	None
	-47 day		
	-1 day		
	0 day		
Firms with neither abnormal return nor public rumours: T0818, T0810, T0803, T0814, T0815, T0816			

According Table 5.37, no rumour for Firm T0814 (mentioned as suspected in Graph 5.12) is found. The daily dummy variable fails to capture the spike in Firm T0814 but a spike on day -25 can be seen clearly in Graph 5.12 for this firm. From Table 5.37, a rumour of possible takeover is found for Firm T0806 on day -36. It is possible that this publicly released news causes the spike on day -25 for Firm T0806.

Table 5.38: The firms' names and the days on which the firms have abnormal returns in the U.K 2009: Firm T0901-T0916

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
T0901	-9 day	None	None
	-6 day		
	-5 day		
T0902	-36 day	-50 day	None
	+2 day		
	+3 day		
T0906	-31 day	-43 day	None
	-30 day		
T0907	None	-2 day	None
T0908	-1 day	None	-11 day
			-43 day
			-44 day
T0911	None	-17 day	None
T0913	-53 day	None	None
	-49 day		
	-46 day		
	-12 day		
	-10 day		
T0914	-12 day	None	None
	-7 day		
T0915	+8 day	None	None
T0916	+9 day	None	None

Firms with neither abnormal return nor public rumours: T0903, T0904, T0905, T0909, T0910, T0912

According to Table 5.38, there is only a rumour release on day -2 which would by no means affect the stock prices from -50 to -40 day. As a result, Firm T0907 (mentioned as suspected in Graph 5.13) is also suspected to have been involved in insider trading. Firm T0910 has several spikes during a period from -60 day to -40 day. No publicly released news is found for Firm T0910 and therefore, Firm T0910 is added to the list of suspected firms. Furthermore, according to news search, no publicly released news is found for Firm T0912, and as a result, it is also added to the list of suspected firms.

Table 5.39: The firms' names and the days on which the firms have abnormal returns in the U.K 2010: Firm T1001-T1018

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
T1002	-46 day	None	None
	-44 day		
	-43 day		
	-23 day		
	-16 day		
T1003	-57 day	None	None
	-1 day		
	+1 day		
	+2 day		
	+3 day		
	+4 day		
T1005	-4 day	None	None
T1007	-7 day	None	None
T1009	None	-1 day	None
		-3 day	
		-6 day	
T1010	-11 day	None	None
T1011	-36 day	-1 day	None
	-4 day		
	-1 day		
T1013	None	None	-21 day
T1015	-13 day	None	None
T1016	None	-19 day	-23 day
			-31 day
T1017	-2 day	None	None
	-1 day		
	0 day		
T1018	-57 day	None	None

Firms with neither abnormal return nor public rumours: T1001, T1004, T1006, T1008, T1012, T1014

Section 5.3.7The categorization after two filters-the dummy variable approach and the news search

Table 5.40 shows the clean, the suspected, the clean after the news search and the suspected after the plotting firms in the U.K from 2006 to 2010 after dummy variable and news search. After the results are shown, the 'clean after news search' will be renamed as 'obscure' and the 'suspected after the plotting' will be categorized as 'suspected' if no news support is found in Table 5.41 for the reason of simplification for further studies.

Table 5.40: The codes of the clean, the suspected, the clean after the news search and the suspected after the plotting firms after two filters in the U.K from 2006 to 2010

2006						
The code of the clean firms			The code of the suspected firms		The clean after the news search	The suspected after the plotting
T0603	T0613	T0618	T0602	T0611	T0601	None
T0605	T0614	T0619	T0604			
T0606	T0615		T0607			
T0609	T0616		T0608			
T0612	T0617		T0610			
2007						
The code of the clean firms	The code of the suspected firms				The clean after the news search	The suspected after the plotting
T0704	T0701	T0710	T0715		None	T0709
T0707	T0702	T0711	T0716			
T0708	T0703	T0712				
	T0705	T0713				
	T0706	T0714				
2008						
The code of the clean firms			The code of the suspected firms		The clean after the news search	The suspected after the plotting
T0803	T0816		T0801	T0812	T0806	T0814
T0804	T0818		T0802	T0813	T0811	
T0808			T0805	T0817		
T0810			T0807			
T0815			T0809			
2009						

The code of the clean firms		The code of the suspected firms		The clean after the news search	The suspected after the plotting
T0903		T0901	T0914	None	T0907
T0904		T0902	T0915		T0910
T0905		T0906			T0912
T0909		T0908			
T0916		T0913			
2010					
The code of the clean firms		The code of the suspected firms		The clean after the news search	The suspected after the plotting
T1001	T1012	T1002	T1011	None	None
T1004	T1013	T1003	T1015		
T1006	T1014	T1005	T1017		
T1008	T1016	T1007	T1018		
T1009		T1010			

Source: Author's summation

Table 5.41: The codes of the clean, the suspected, and the obscure firm after two filters in the U.K from 2006 to 2010

2006						
The code of the clean firms			The code of the suspected firms			The obscure firm
T0603	T0613	T0619	T0602	T0611		T0601
T0605	T0614		T0604			
T0606	T0615		T0607			
T0609	T0616		T0608			
T0612	T0617		T0610			
2007						
The code of the clean firms			The code of the suspected firms			The obscure firm
T0704			T0701	T0709	T0714	None
T0707			T0702	T0710	T0715	
T0708			T0703	T0711	T0716	
			T0705	T0712		
			T0706	T0713		
2008						
The code of the clean firms			The code of the suspected firms			The obscure firm
T0803	T0816		T0801	T0812		T0806
T0804	T0818		T0802	T0813		T0811
T0808			T0805	T0814		
T0810			T0807	T0817		
T0815			T0809			
2009						
The code of the clean firms			The code of the suspected firms			The obscure firm
T0903	T0916		T0901	T0910		None
T0904			T0902	T0912		
T0905			T0906	T0913		
T0909			T0907	T0914		

T0911		T0908	T0915	
2010				
The code of the clean firms		The code of the suspected firms		The obscure firm
T1001	T1012	T1002	T1011	None
T1004	T1013	T1003	T1015	
T1006	T1014	T1005	T1017	
T1008	T1016	T1007	T1018	
T1009		T1010		

Source: Author's summation

Section 5.3.8The results of the detection of the outliers

Tables 5.42-51 give the results from analysing and detecting outliers. With this filter, the firms are firstly grouped to be clean, suspected and obscure according to the previous filter, and then the firms in each group are examined respectively as to whether they have positive squared abnormal returns equal or greater than 3.5 or 4 multiplied by the standard error[20].

Table 5.42: The day(s) on which the clean firms have positive outliers 3.5*SD or 4*SD in the U.K in 2006[21]

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0603	-55 day	1.14	None
	-28 day	0.87	
T0605	-26 day	1.94*	None
T0606	-48 day	2.86***	-43 day
T0609	-57 day	2.97***	-19 day
T0612	-13 day	1.04	None
T0613	-21 day	2.69***	None
T0614	None	-	None
T0615	None	-	-13 day
T0616	-2 day	3.54***	None
T0617	None	-	None

[20] Only the positive error is squared and examined and the negative error is excluded.

[21] The first column in the table is the firm's name and the second column is the days on which the squared abnormal return is greater than 4*SD. For the squared abnormal return which is greater than 3.5*SD, a bracket is given after the day to specify. The third column is the t-statistics for the daily dummy variable, the significance level is stated in the bracket (e.g. 2.86(1%) means the t-statistics is 2.86 and it is significant with 1% level of significance.) The fourth column is the day on which public rumours or director's trading is found.

T0618	None	-	None
T0619	-14 day (3.5*SD)	0.73	None
	-4 day (3.5*SD)	0.83	

*, **, *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels, respectively.

Table 5.43: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.K in 2006

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0601	-8 day	10.45 (1%)	-7 day
			-9 day
T0602	-21 day	6.16***	-29 day
T0604	-6 day	3.98***	None
T0607	-31 day	6.66***	None
T0608	-22 day	2.98***	None
	-23 day (3.5*SD)	3.51***	
T0610	-29 day	7.85***	-41 day
	-9 day	6.26***	
T0611	-1 day	6.51***	None

Table 5.44: The day(s) on which the clean firms have positive outliers 3.5*SD or 4*SD in the U.K in 2007

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0704	-23 day	3.07***	None
T0707	-3 day	2.71***	None
T0708	-57 day (3.5*SD)	2.49**	None

Table 5.45: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.K in 2007

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0701	-33 day	3.18***	None
T0702	-1 day	5.03***	None
T0703	-3 day	5.15***	None

T0705	-1 day	17.24***	None
T0706	-1 day	-1.46	-1 day
T0709	-45 day	5.26***	None
T0710	-4 day	5.37***	-10 day
T0711	-1 day	13.68***	-1 day
T0713	-1 day	5.98***	None
T0714	-57 day	20.65***	None
T0715	-34 day	15.12***	-4 day
T0716	None	-	-6 day
			-7 day

Table 5.46: The day(s) on which the clean firms have positive outliers 3.5*SD or 4*SD in the U.K in 2008

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0803	None	-	None
T0804	None	-	None
T0806	-25 day	11.63***	-36 day
T0808	-2 day	2.68***	-2 day
T0810	None	-	None
T0815	-55 day	2.85***	None
	-16 day	2.56**	
T0816	-39 day	0.17	None
T0818	None	-	None

Table 5.47: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.K in 2008

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0801	None	-	None
T0802	-33 day	6.69***	-1 day
T0805	-18 day	7.62***	-11 day
			-10 day
			-5 day
T0807	-23 day	8.64***	None
T0809	-33 day	4.28***	None
	-1 day	3.64***	
T0811	-1 day	8.89***	-45 day
			-3 day
T0812	-21 day	10.10***	None
T0813	-9 day	4.12***	None
T0814	-15 day	5.54***	None

T0817	-1 day	7.52***	None

Table 5.48: The day(s) on which the clean firms have positive outliers 3.5*SD or 4*SD in the U.K in 2009

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0903	-23 day	2.43**	None
	-1 day (3.5*SD)	2.03**	
T0904	-53 day	3.25***	None
T0905	-18 day	4.76***	None
T0909	None	-	None
T0910	-42 day	4.65***	None
T0911	-38 day	2.01**	-17 day
	-39 day (3.5*SD)	1.86*	
T0912	-52 day	13.71***	None
T0916	-31 day	1.11	None

Table 5.49: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.K in 2009

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T0901	-10 day	7.64***	None
	-9 day	7.67***	
T0902	-36 day	4.71***	-50 day
T0906	-31 day	21.95***	-43 day
T0907	-44 day	4.54***	-2 day
T0908	None	-	-44 day
			-43 day
			-11 day
T0913	-46 day	4.37***	None
	-35 day (3.5*SD)	3.66***	
T0914	-7 day	8.35***	None
T0915	-8 day	4.47***	None

Table 5.50: The day(s) on which the clean firms have positive outliers 3.5*SD or 4*SD in the U.K in 2010

The clean target firms	**The day(s) on which the squared abnormal return is**	**t-statistics**	**Public rumours or Director buys share**

	greater than 4*SD		
T1001	-42 day	3.09***	None
T1004	-36 day	3.72***	None
T1006	-48 day	1.50	None
T1008	-3 day	1.30	None
T1009	-23 day	3.63***	-1 day
			-3 day
			-6 day
T1012	None	-	None
T1013	None	-	-21 day
T1014	None	-	None
T1016	-30 day	2.01**	-19 day
	-58 day (3.5*SD)	1.75*	-27 day
	-55 day (3.5*SD)	1.78*	-31 day

Table 5.51: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.K in 2010

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
T1002	-16 day	8.82***	None
T1003	-1 day	5.58***	None
T1005	-4 day	3.02***	None
T1007	None	-	None
T1010	None	-	None
T1011	-1 day	16.32***	-1 day
	-36 day (3.5*SD)	12.41***	
T1015	-40 day	6.35***	None
T1017	-41 day	5.35***	None
T1018	-57 day	5.18***	None

Section 5.3.9The categorization after three filters-the dummy variable approach, the news search, and the detection of the outliers

After the previous three filters- the dummy variable approach, the news search and the detection of outliers, the U.K firms are categorized into five groups-the clean, the obscure, the obscure with lagged news, the suspected and the ultra-suspected.

Table 5.52: The codes of the clean, obscure, obscure with lagged news suspected and ultra-suspected firms after three filters in the U.K from 2006 to 2010

2006				
The code of the	The code of	The code of	The code of	The code of the

clean firms		the obscure firms	the obscure firms with lagged news	the suspected firms	ultra-suspected firms
T0603	T0618	T0601	T0606	T0605	T0604
T0612	T0619	T0602		T0609	T0607
T0614				T0613	T0608
T0615				T0616	T0610
T0617					T0611
2007					
The code of the clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms
None		T0710	None	T0704	T0701 T0713
		T0711		T0706	T0702 T0714
		T0712		T0707	T0703 T0715
				T0708	T0705
				T0716	T0709
2008					
The code of the clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms
T0803		T0806	T0805	T0801	T0802 T0814
T0804		T0808		T0815	T0807 T0817
T0810		T0811			T0809
T0816					T0812
T0818					T0813
2009					
The code of the clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms
T0909		None	None	T0903 T0911	T0901 T0914
T0916				T0904 T0912	T0902 T0915
				T0905	T0906
				T0908	T0907
				T0910	T0913
2010					
The code of the clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms
T1006		None	None	T1001 T1016	T1002 T1017
T1008				T1004	T1003 T1018
T1012				T1007	T1005
T1013				T1009	T1011

T1014			T1010		T1015	

Source: Author's summation[22]

Section 5.3.10The Result of the Abnormal Turnover (AT) analysis

Here, I examine whether the daily average turnover calculated for two months (-60 to -11 trading days) prior to merger announcement and two weeks (-10 to -1 trading days) prior to the merger announcement gives any signal of presence of any possible insider trading. I use the average turnover calculated for a period from -180 to -61 day as the benchmark for average turnover in normal days. Then the daily average turnover for each firm is compared with 1.25 multiplied by the benchmark, 1.50 multiplied by the benchmark and 2.0 multiplied by the benchmark because of gradual stringent standard.

Table 5.53: The result of the AT analysis in the U.K. from 2006 to 2010

2006			
	The firms with no difference between two means (benchmark*1.25)	The firms with no difference between two means (benchmark*1.5)	The firms with no difference between two means (benchmark*2.0)
The average of the turnover from -61day to -11 day	T0617	None	T0605, T0604, T0615, T0613
The average of the turnover from -10 day to 0 day	T0617	None	None
2007			
The average of the turnover from -61 day to -11 day	None	None	T0713
The average of the turnover from -10 day to 0 day	None	None	None
2008			
The average of the turnover from -61day to -11 day	None	None	T0803, T0814
The average of the	None	None	T0803

[22] The categorization of the firms after three filters can be found in Chapter 4, Table 4.4.

turnover from -10 day to 0 day			
2009			
The average of the turnover from -61 day to -11 day	None	None	T0916, T0914, T0901, T0908
The average of the turnover from -10 day to 0 day	None	None	None
2010			
The average of the turnover from -61day to -11 day	None	T1018	T1015, T1004, T1005
The average of the turnover from -10 day to 0 day	None	T1018	None

Source: Author's calculation

From Table 5.53, it is clear that the ATs mainly exist two months prior to the announcement day (-61 to -11 day). The fact suggests that there is a strong evidence of possible insider trading about one month prior to the merger announcement and this might indicate that the insider traders choose this period to make it less observable than the period from -10 to -1 day.

Table 5.54: Distribution of firms with respect to percentage of AT increase (Benchmark: AT for a period from -180 to -61 day before announcement)

% High of AT	No. & % of firms with higher AT from -61 to -11 day	No. & % of firms with higher AT from -10 to 0 day
2006		
125-150%	1 (5%)	1 (5%)
150-200%	0 (0%)	0 (0%)
>200%	4 (21%)	0 (0%)
Total	5 (32%)	1 (5%)
2007		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	1 (6%)	0 (0%)
Total	1 (6%)	0 (0%)
2008		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	2 (11%)	1 (6%)
Total	2 (11%)	1 (6%)
2009		
125-150%	0 (0%)	0 (0%)

150-200%	0 (0%)	0 (0%)
>200%	4 (25%)	0 (0%)
Total	4 (25%)	0 (0%)
2010		
125-150%	0 (0%)	0 (0%)
150-200%	1 (6%)	1 (6%)
>200%	3 (17%)	0 (0%)
Total	4 (22%)	1 (6%)

Source: Author's calculation

Section 5.3.11The categorization after the dummy variable, the news search, the detection of the outliers and the analysis of the abnormal turnover (AT)

After applying all four filters- the dummy variable approach, the news search, the detection of the outliers, and the analysis of the AT, the U.K firms are categorized into six groups-the clean, the obscure, the obscure with lagged news, the suspected, the ultra-suspected and the ultra-ultra-suspected.

Table 5.55: The codes of the absolute clean, obscure, obscure with lagged news suspected ultra-suspected and ultra-ultra-suspected firms after four filters in the U.K from 2006 to 2010

2006						
The code of the absolute clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
T0603	T0601	T0606	T0616	T0605	T0608	T0604
T0612	T0602		T0609	T0613		
T0614			T0617	T0607		
T0618			T0615	T0610		
T0619				T0611		
2007						
The code of the absolute clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
None	T0711	None	T0704	T0715	T0703	T0713
	T0710		T0707	T0705	T0709	

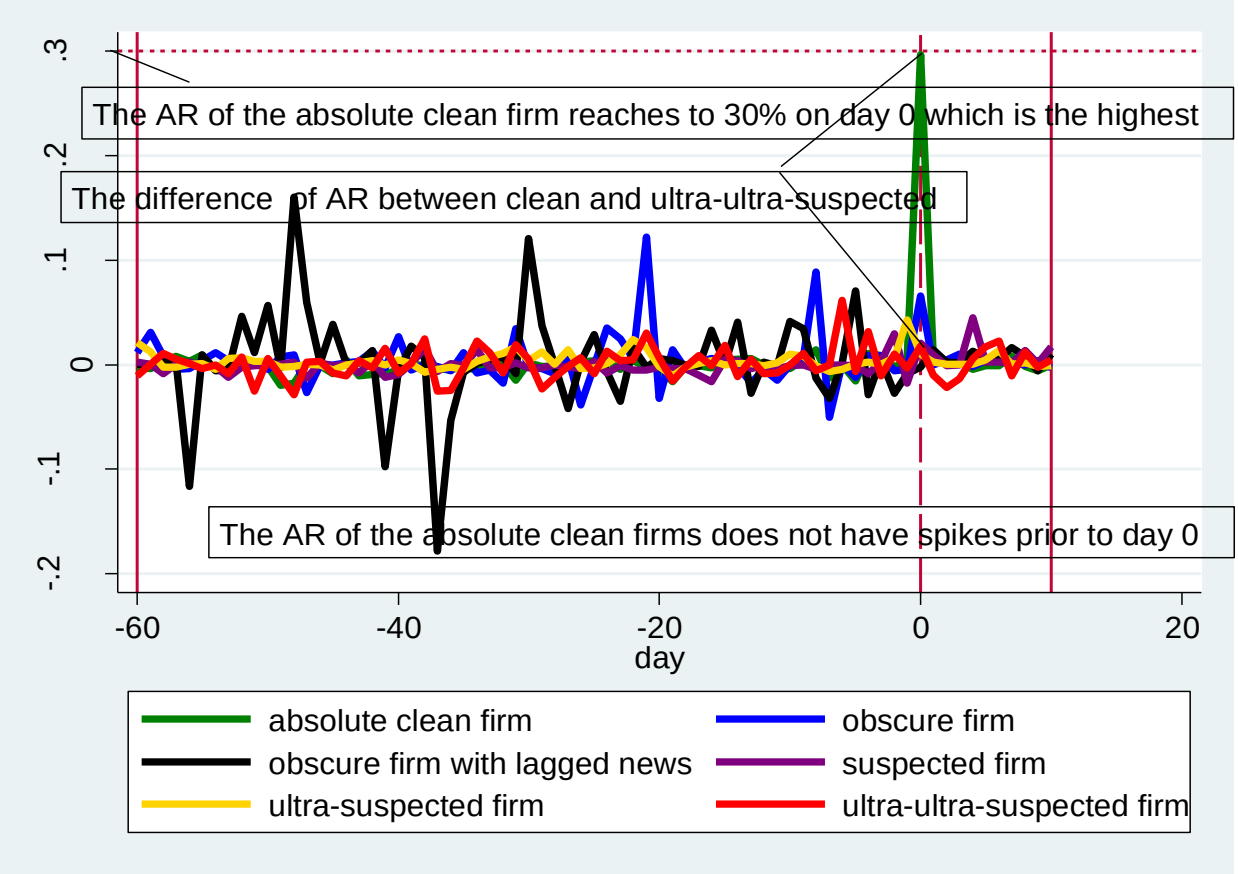
	T0712		T0708	T0702		
			T0716	T0701		
			T0706	T0714		
2008						
The code of the absolute clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
T0818	T0806	T0805	T0815	T0813	T0817	T0814
T0816	T0808		T0801	T0802		
T0810	T0811		T0803	T0809		
T0804				T0807		
				T0812		
2009						
The code of the absolute clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
T0909	None	None	T0903	T0912	T0913	T0906	T0914
			T0904	T0916	T0908		T0901
			T0905		T0915		
			T0910		T0902		
			T0911		T0907		
2010						
The code of the clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
T1006	None	None	T1001	T1002		T1018
T1008			T1007	T1004		T1015
T1012			T1009	T1003		T1005
T1013			T1016	T1017		
T1014			T1010	T1011		

Source: Author's summation[23]

[23] The categorization of the firms after four filters can be found in Chapter 4, Table 4.5.

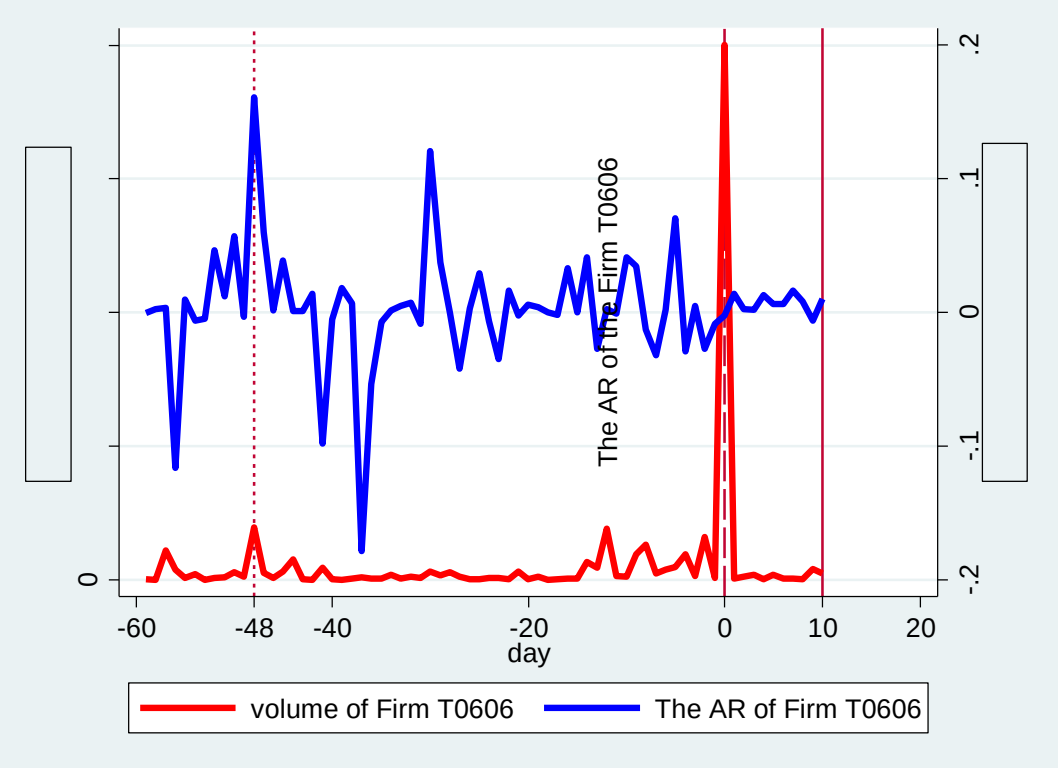
Figures 5.36-5.40 present the AR of the six categories of firms in the U.K from 2006 to 2010.

Figure 5.36: The AR of the six categories of firms in the U.K 2006



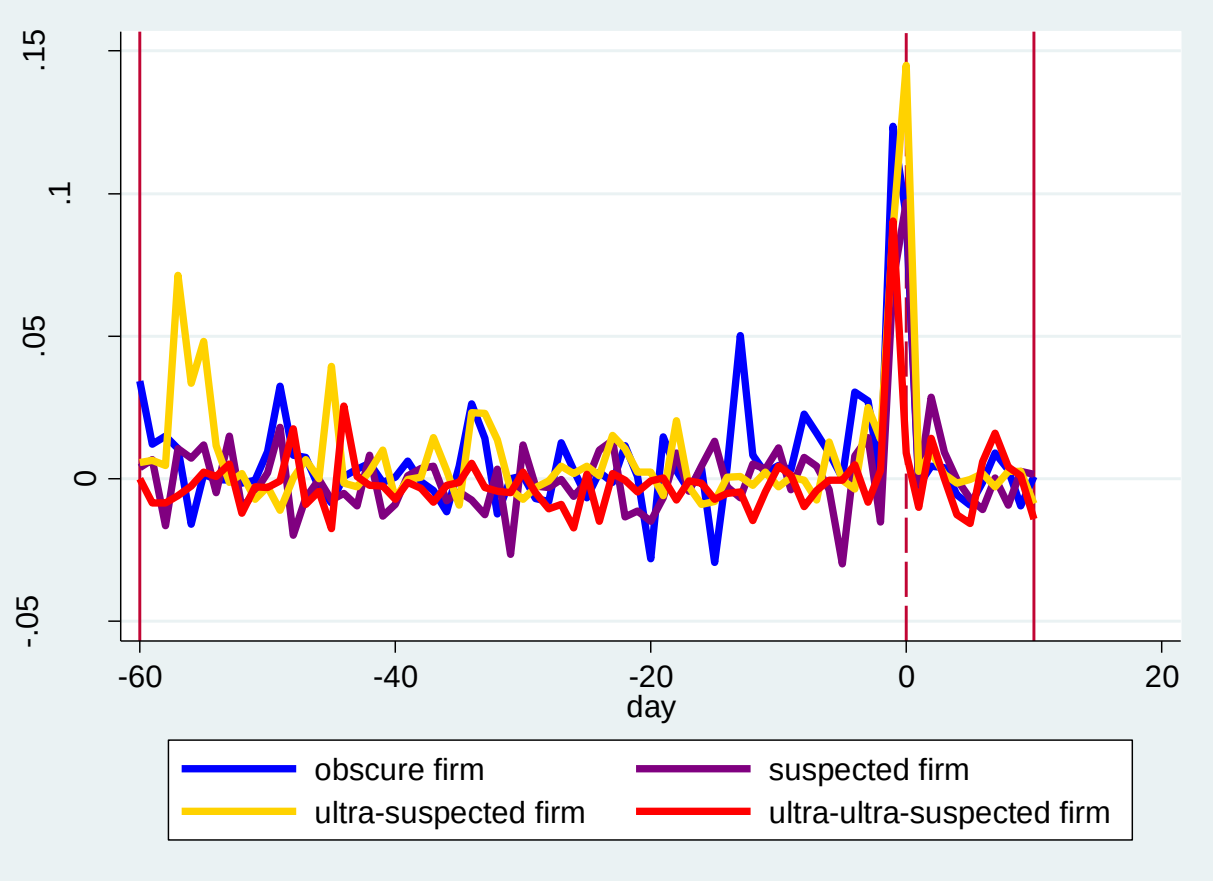
According to Figure 5.36, the AR of the absolute clean firm does not have spikes prior to day 0. Moreover, it is noticeable that the AR of the ultra-ultra-suspected firm has a spike on about day -7 and then nothing on day 0. On the other hand, the AR of the absolute clean firm reaches to 30% which is the highest among all the categories on day 0. The evidence above has supported the day 0 hypothesis that with the existence of insider trading, the abnormal return would be, at least partly, absorbed before merger announcement. Furthermore, the obscure firm with lagged news has both significant positive and negative spikes before the merger announcement. The only obscure firm with lagged news is Firm T0606. It has publicly news release on day -43. Graph 5.15 below presents the daily average turnover (AT) of the Firm T0606.

Graph 5.15: The daily average turnover (AT) of the Firm T0606



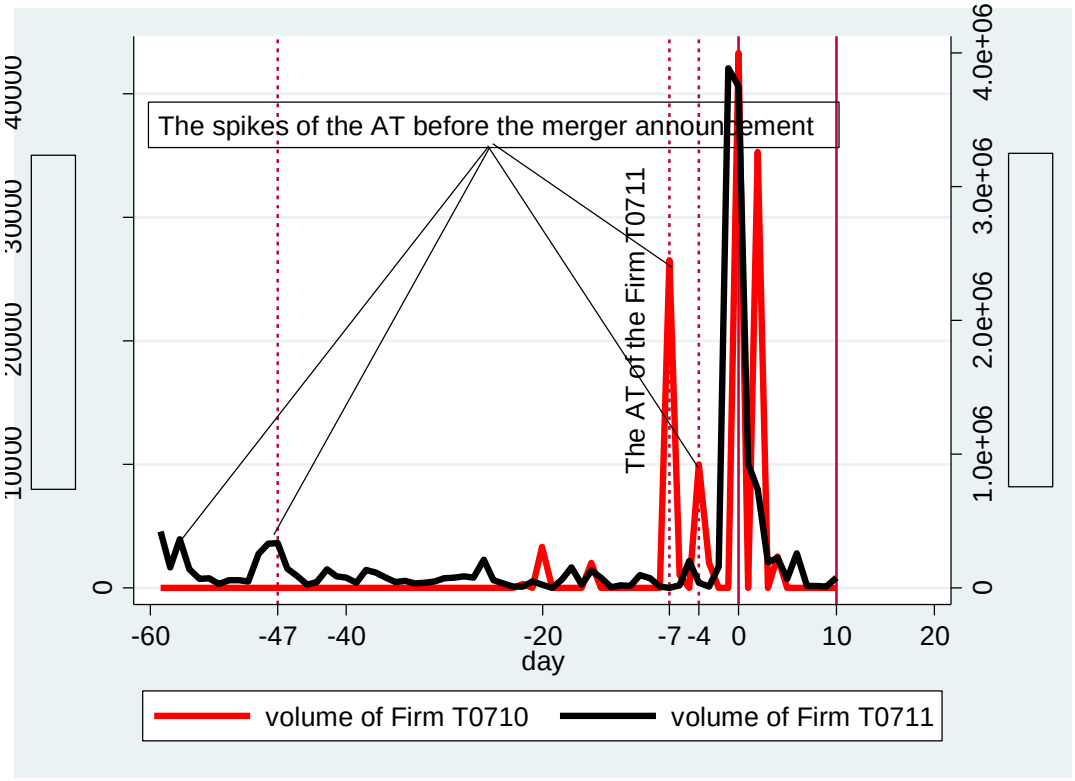
According to Graph 5.15, on day -57 and -48, there are two spikes of the AT and the news has released on day -43, after which the AR has two significantly negative spikes. Likewise, the AT has another run-up on day -57 after which there is a significantly negative spike on AR. Therefore, the argument that the insiders would buy share and then release the information to the public to cover up their insider trading activities does not apply in this case because the insiders will not buy shares and release negative information to make themselves suffer the loss As a result, the Firm T0606 remains to be obscure.

Figure 5.37: The AR of the four categories of firms in the U.K 2007



According to Figure 5.37, there is no absolute clean firm or obscure firm with lagged news in the U.K in 2007. All the other four categories of firms have significant spikes on AR before the merger announcement. There are significant day 0 spikes, for example for the ultra suspected firm, but this is substantially less than for the clean firm in 2006. There are three obscure firms in 2007, and they are Firm T0710 which has publicly news release on day -10, Firm T0711 which has publicly news release on day -1 and Firm T0712 which has publicly news release on day -18. Graphs 5.16-5.19 give the daily average turnover (AT) of the three firms.

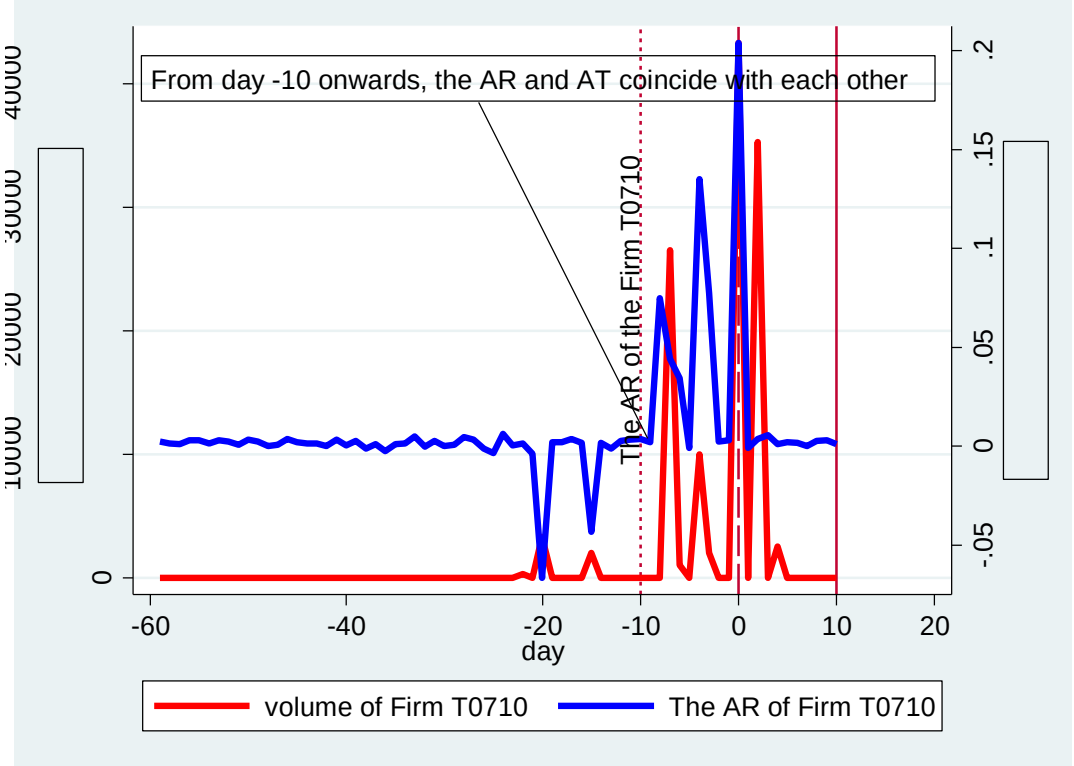
Graph 5.16: The AT of the Firm T0710 and Firm T0711



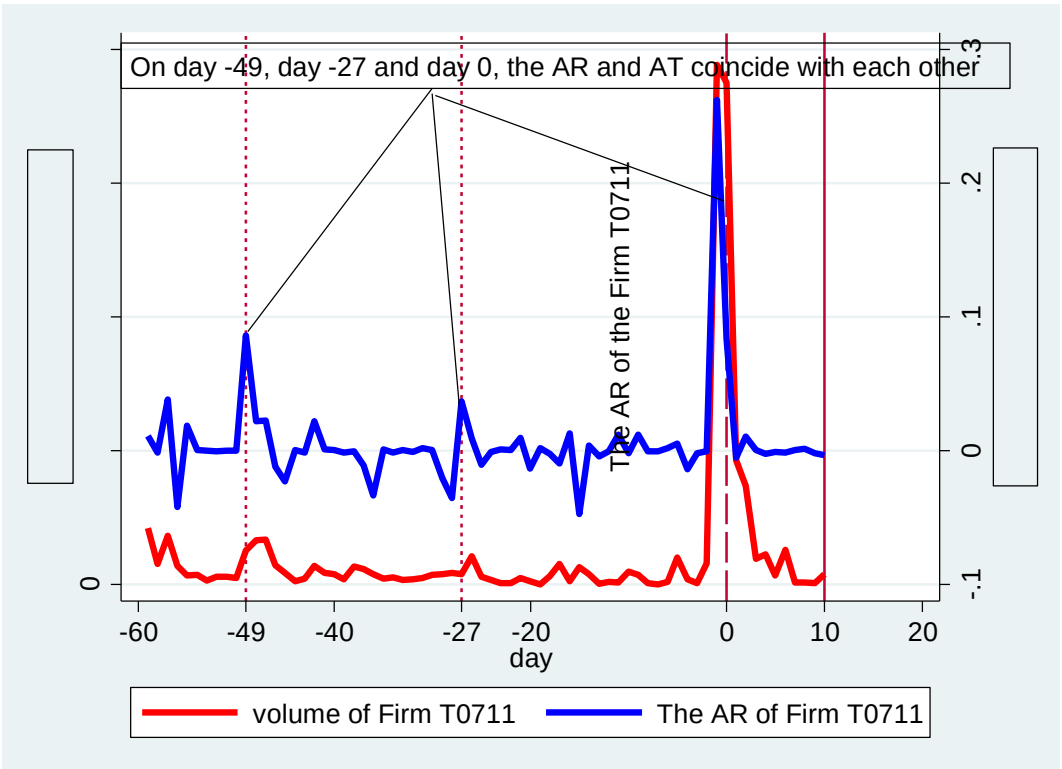
Firm T0710 has publicly released news on day -10 and on day -7 and day -4, there are two significant spikes in the AT accompanied with significant positive AR which can be seen in Figure 5.37. Therefore, the significant positive AR from day -10 to day 0 might be due to the increase of AT which is caused by the publicly released positive news.

Firm T0711 has publicly released news on day -1 and according to Graph 5.16, the AT increases sharply on from day -3. This might be the case that the insiders buy shares to gain from the possession of inside information and then release the news to the public to cover up their illegal activities. From Figure 5.37, there is a significant positive AR on about day -3 and this can be explained by the run-up of the AT on day -3.

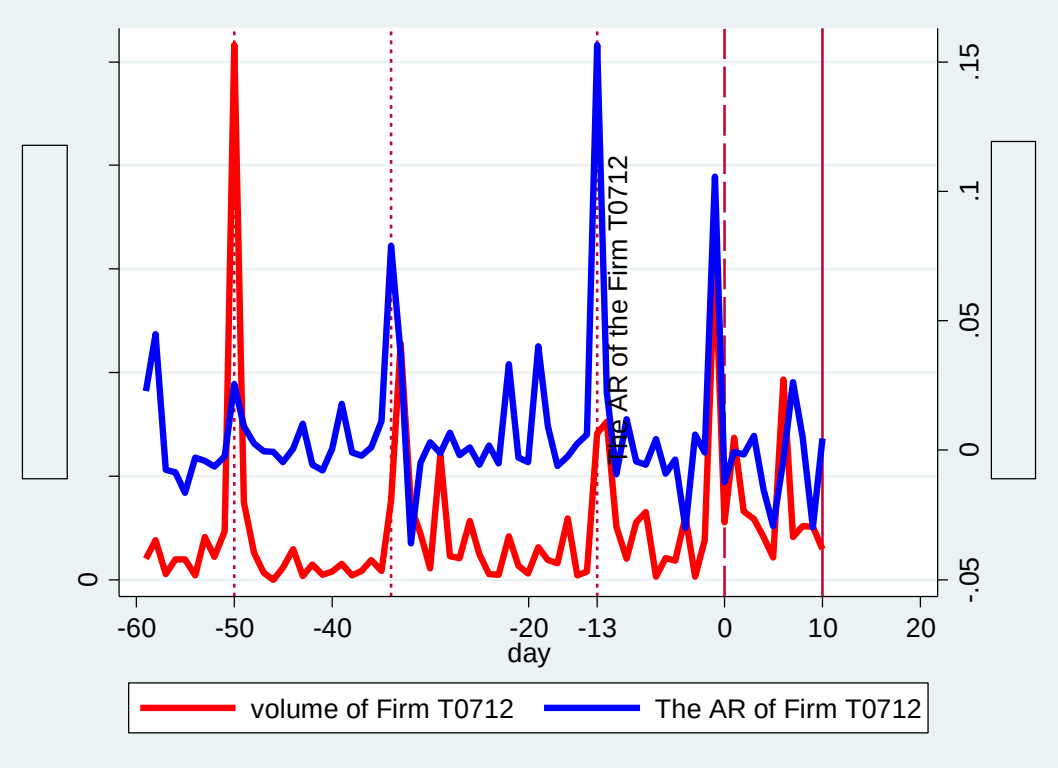
Graph 5.17: The AT and AR of the Firm T0710



Graph 5.18: The AT and AR of the Firm T0711

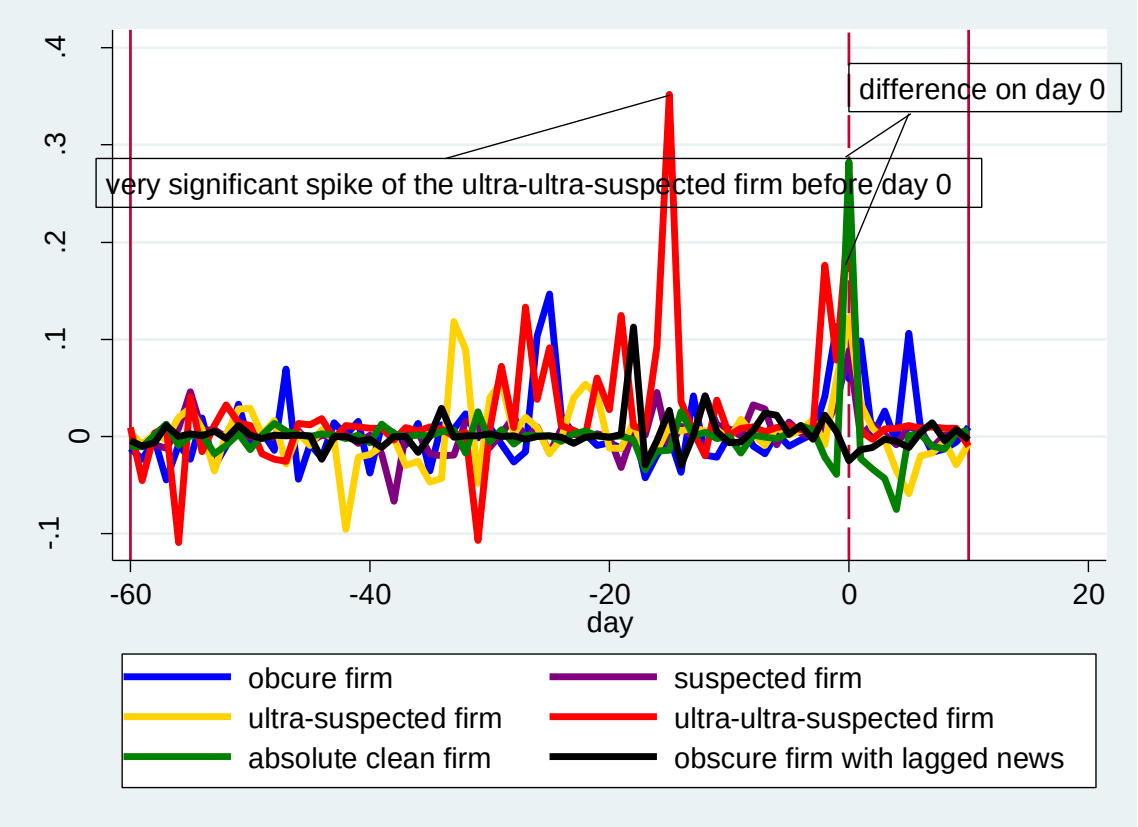


Graph 5.19: The AT and AR of the Firm T0712



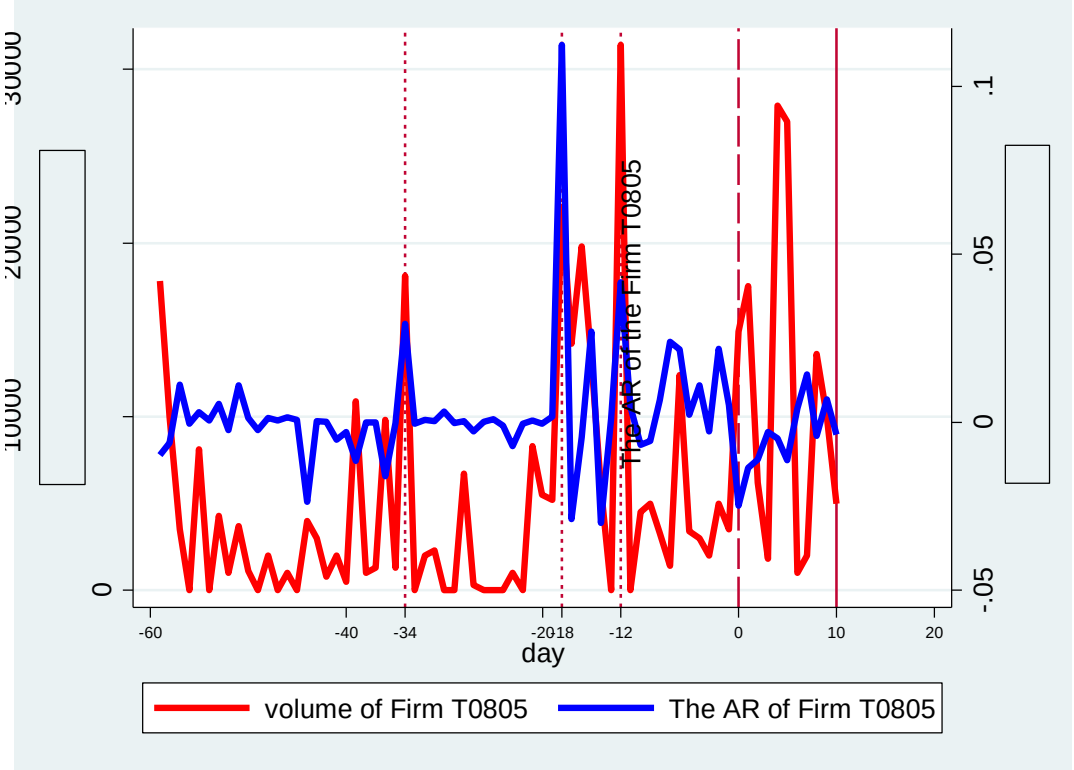
Firm T0712 has publicly released news on day -18. According to Graph 5.19, on day -50, day -33 and day -13, there are significant spikes on the AT. Finally, after the news released on day -18, the AT starts to increase. The spikes on AT which precedes a spike in the AR could indicate someone buying shares which then start to increase as the news begins to get out.

Figure 5.38: The AR of the four categories of firms in the U.K 2008



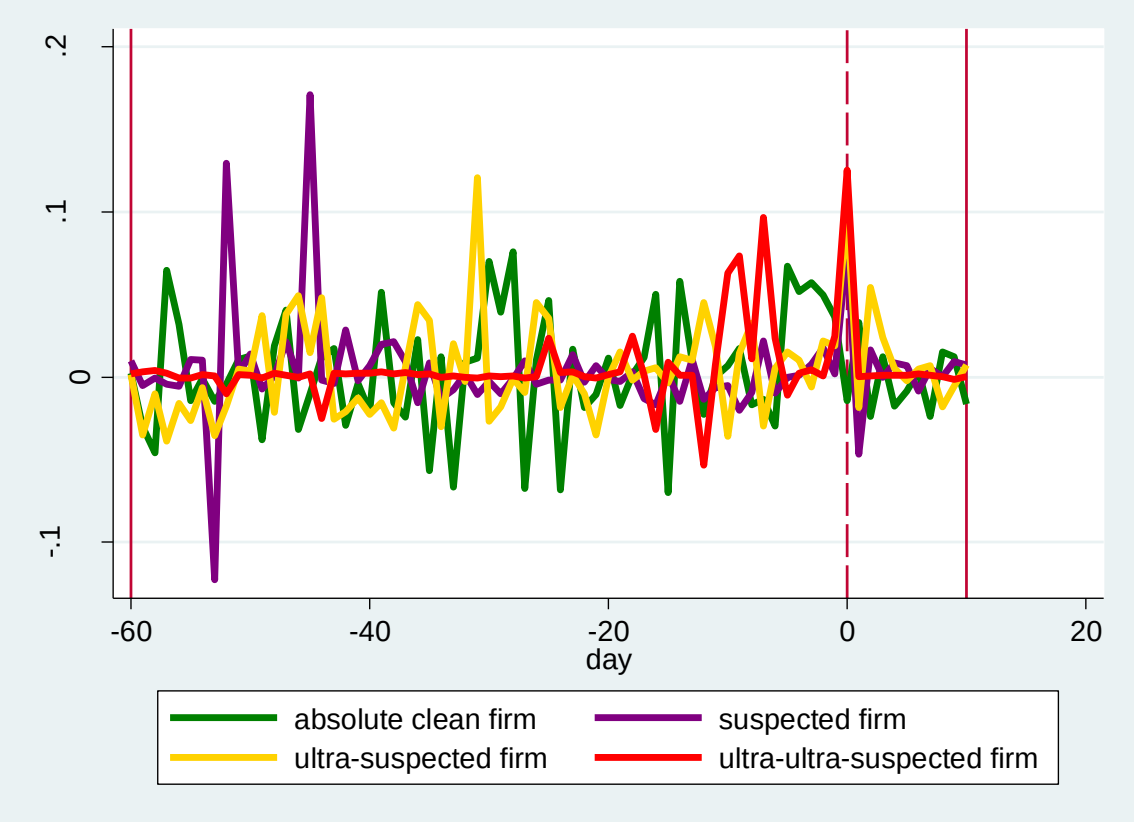
According to Figure 5.38, the AR of the absolute clean firm does not have any spikes before merger announcement. Furthermore, on day 0, the AR of the absolute clean firm is the highest among all the categories which again supports the day 0 hypothesis. For the ultra-ultra-suspected and ultra-suspected firms, very significant ARs before merger announcement are found. Apart from this, the obscure firm and the obscure firm with lagged news also have significant ARs before day 0.

Graph 5.20: The AT and AR of the Firm T0805



There is only one obscure firm with lagged news-the Firm T0805. This firm has publicly released news on day -11, day -10 and day -5 respectively. It is noticeable according to the Graph 5.20 that the three news releases are all after significant ATs. This is highly suspicious because the insiders can buy shares in advance, making profit on inside information and then release the information to the public. However, according to Figure 5.38, no significant spikes on AR can be seen after day -10. The most significant spike appears on about day -18, accompanied by an increase in the AT. Therefore, the spike on AR might be due to insider trading around day -18 after which the insiders hold the information for a week and then release to the public or it might be due to pure market activity.

Figure 5.39: The AR of the four categories of firms in the U.K 2009



According to Figure 5.39, the AR of the absolute clean firm is experiencing both significant positive spikes and significant negative spikes. On the merger announcement, the absolute clean does not seem to have substantial AR as suggested by the day 0 hypothesis. There is only one absolute clean firm- the Firm T0909. A graph is presented below for the AT and AR of the Firm T0909.

Graph 5.21: The AT and AR of the Firm T0909

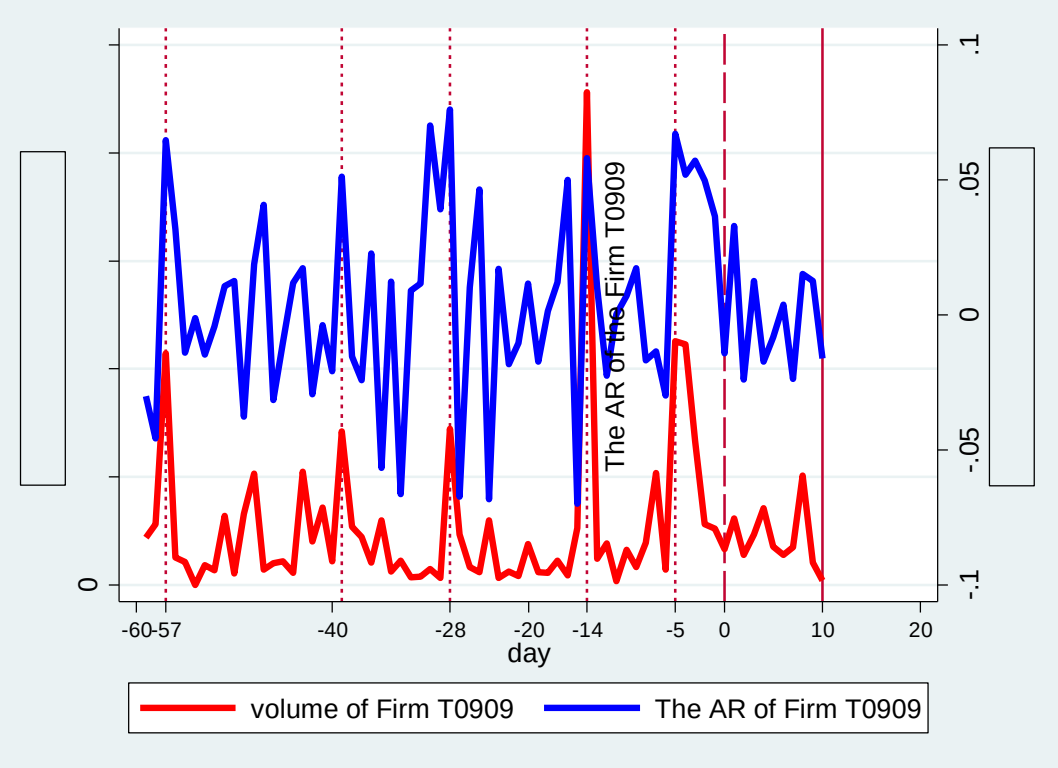
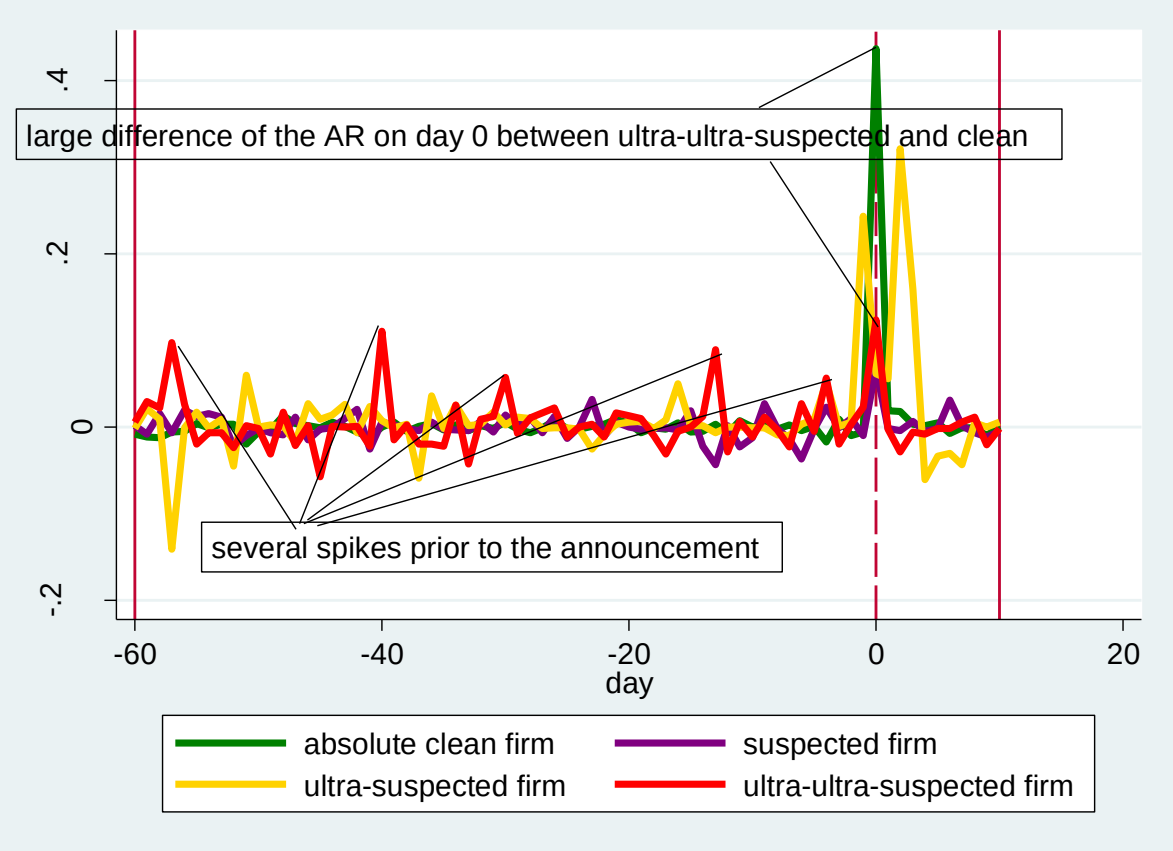


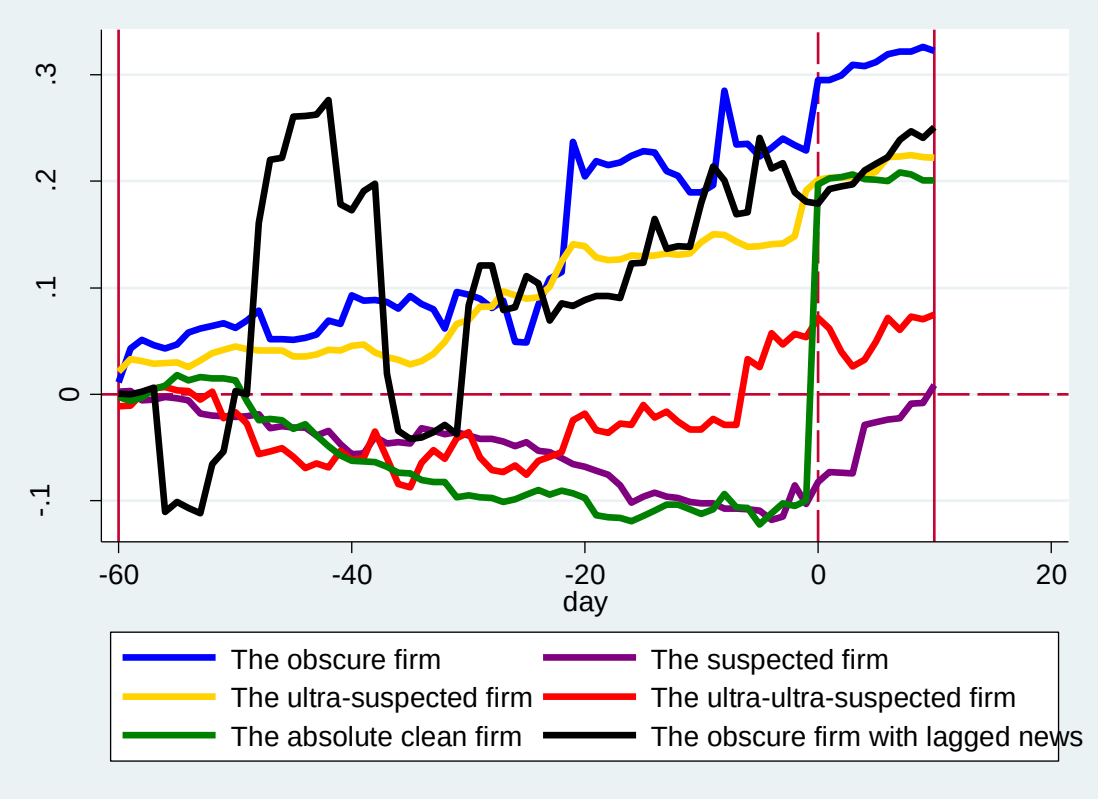
Figure 5.40: The AR of the four categories of firms in the U.K 2010



According to Figure 5.40, the AR of the absolute clean firm does not have spikes before the merger announcement and on day 0, the AR of the clean firm reaches more than 40% which is the highest among all the categories in 2010. The AR of the ultra-ultra-suspected firm has several significant spikes before merger announcement and moreover, on day 0, the difference of the ARs between the absolute clean firm and the ultra-ultra-suspected firm is quite substantial-about 20%.

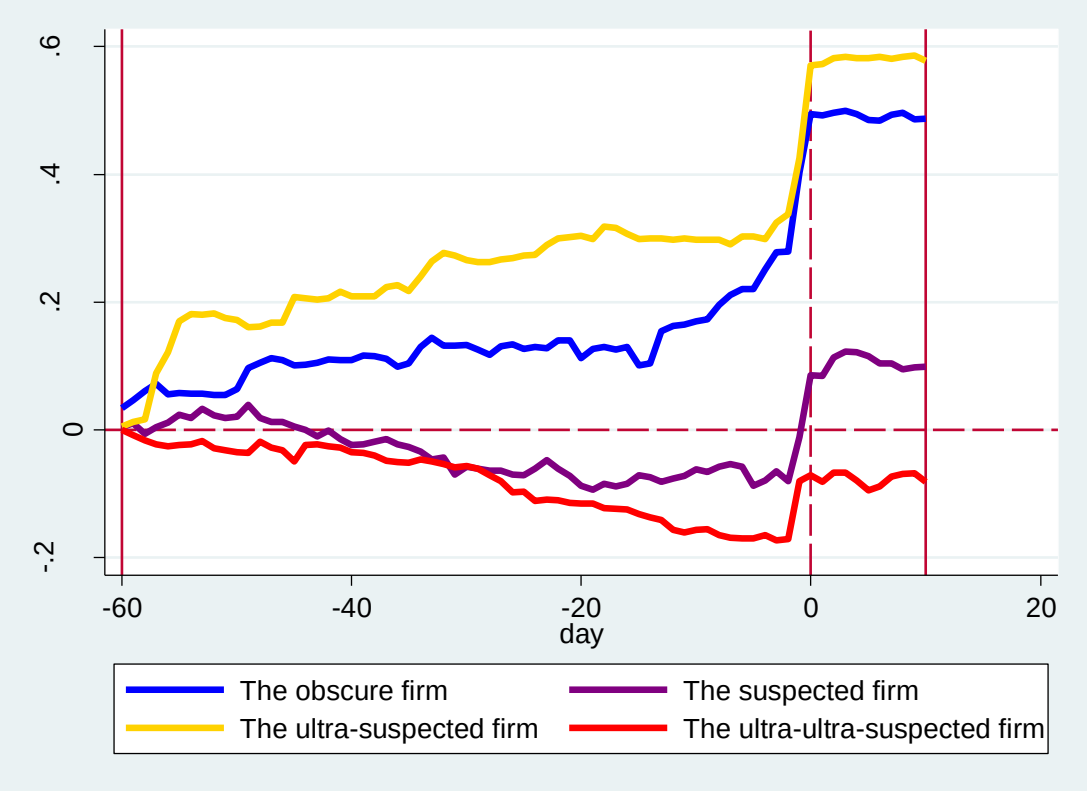
Figures 5.41-5.45 present the CAAR of the six categories-the absolute clean firm, the obscure firm, the obscure firm with lagged news, the suspected firm, the ultra-suspected firm and the ultra-ultra-suspected firm. According to the previous literature, if there is trading on inside information, the CAAR is expected to build up before the merger announcement.

Figure 5.41: The CAAR of the six categories of firms in the U.K 2006



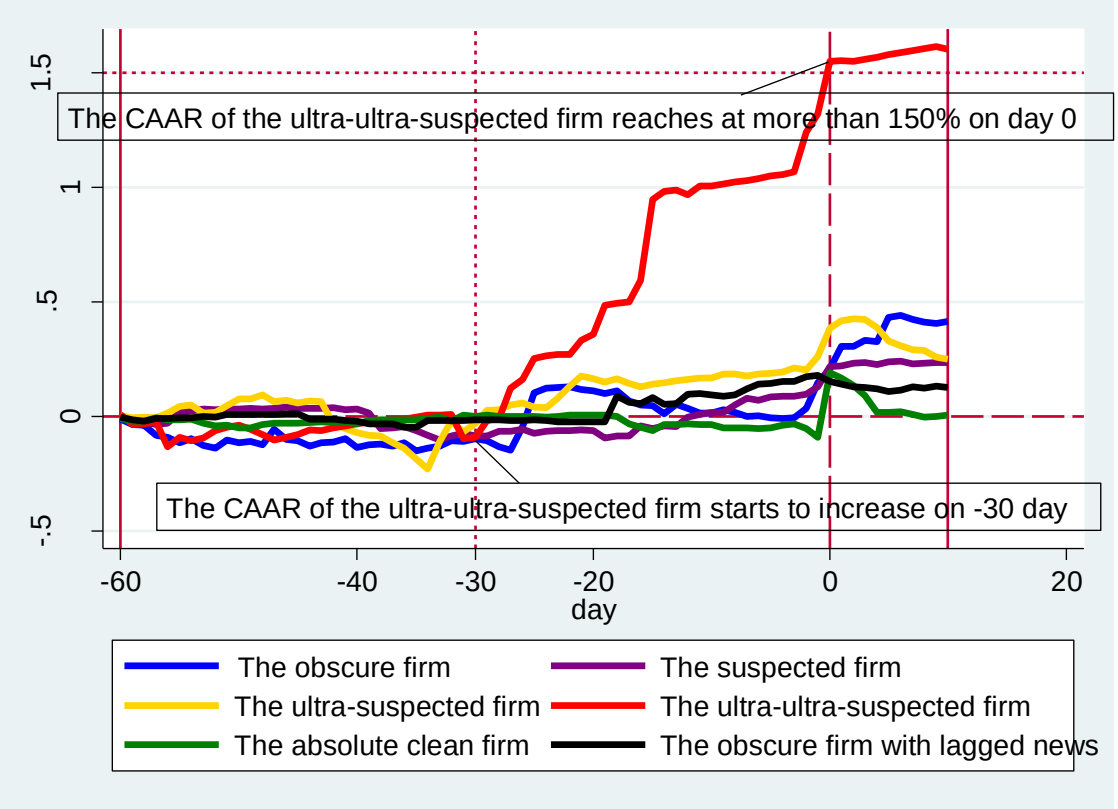
According to Figure 5.41, only the CAAR of the absolute clean firm rapidly builds up on day 0. Before the merger announcement, the CAAR of the absolute clean firm decreases slowly and reaches about -10%. On day 0, it increases sharply to 20%. It is also noticeable that the CAAR of the suspected firm ends up negative while the CAARs of the other categories of firms are all positive on day 0. The CAAR of the obscure firm and the ultra-suspected firm increase steadily all the way through the event window.

Figure 5.42: The CAAR of the four categories of firms in the U.K 2007



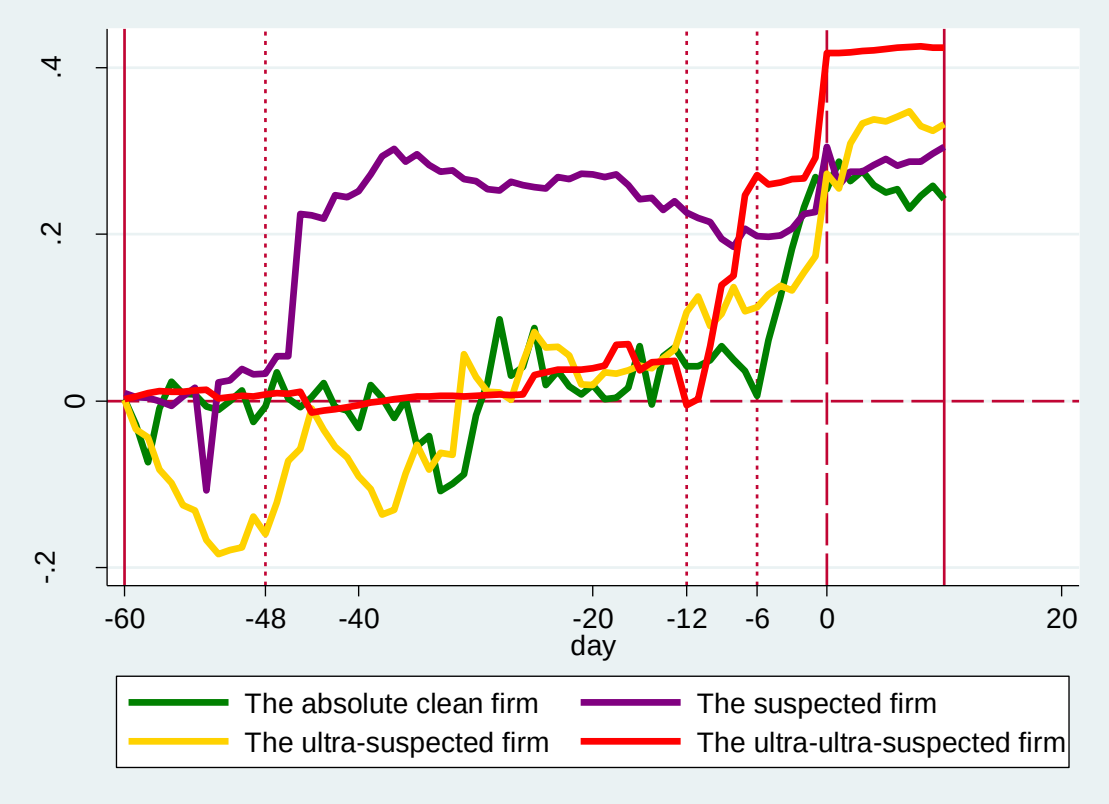
Similar to Figure 5.41, the CAARs of the obscure firm and the ultra-suspected firm increase steadily all the way through the event window and end up at comparatively higher level- the CAAR of the ultra-suspected firm ends up at about 60% on day 0 while the CAAR of the obscure firm reaches at about 50%. On the other hand, the CAAR of the ultra-ultra-suspected firm starts to increase on day -3 but still ends negative.

Figure 5.43: The CAAR of the four categories of firms in the U.K 2008



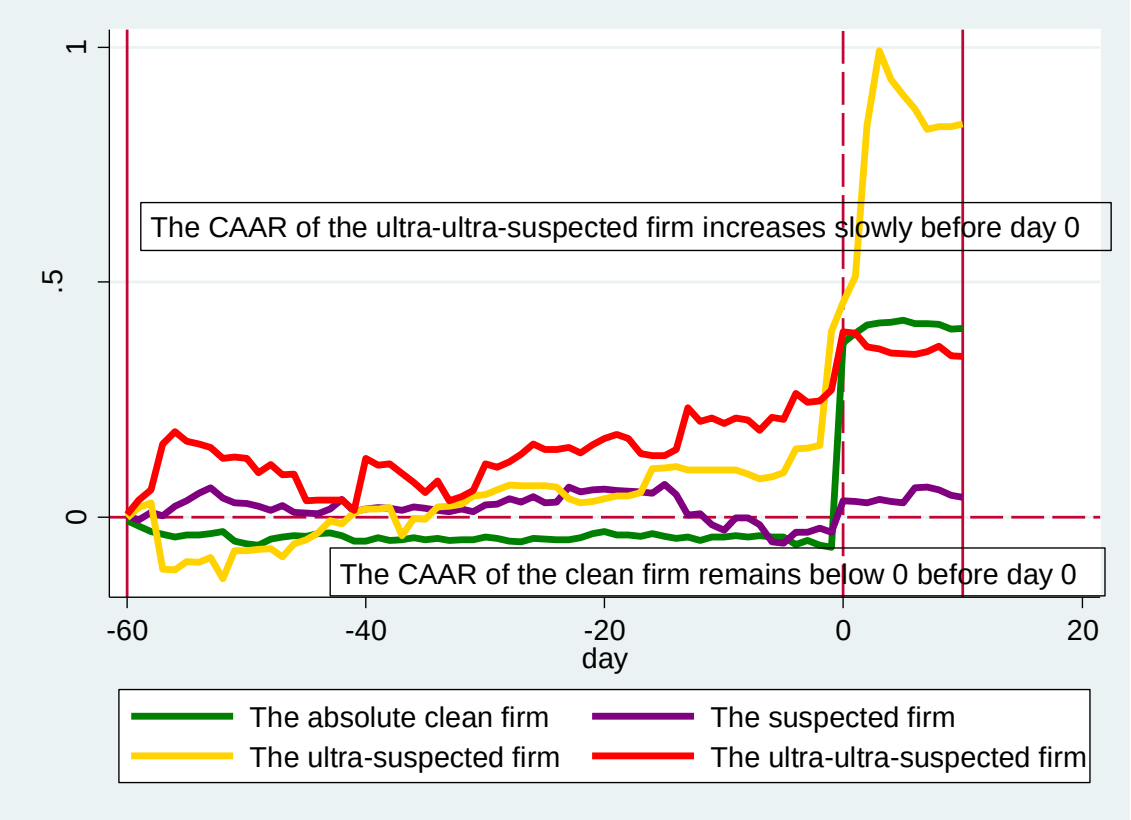
According to Figure 5.43, the CAAR of the ultra-ultra-suspected firm starts to increase on -30 day and ends up at more than 150% on day 0. For the CAAR of other categories of firms, they all end up positive on day 0. Before the merger announcement, the CAARs of all the categories apart from that of the ultra-ultra-suspected firm remain close to 0.

Figure 5.44: The CAAR of the four categories of firms in the U.K 2009



According to Figure 5.44, the day -48 sharp increase of the CAAR of the suspected firm is highly suspicious of the involvement of insider trading. The CAAR of the ultra-ultra-suspected firm starts to leap up on day -12 and leaps up again on day -6 while the CAAR of the absolute clean firm starts to increase on day -6. On day 0, the CAAR of the ultra-ultra-suspected firm reaches highest at 40% while the CAAR of the absolute clean firm ends up at 30% on the merger announcement day.

Figure 5.45: The CAAR of the four categories of firms in the U.K 2010



According to Figure 5.45, the CAAR of the absolute clean firm remains below 0 and starts to build up on -1 day. On day 0, the buildup in the CAAR of the absolute clean firm is pronounced at about 40%. This is an indication that these absolute clean firms are indeed clean. On the other hand, the increasing trend in CAAR of the ultra-ultra-suspected firm starts from day -60, though with occasional dips. It does not have an obvious leap up on day 0 and ends up at almost the same level which is 40% with that of the absolute clean firm. The CAAR of the ultra-suspected firm decreases before day -58 and then it increases steadily to about 20% before the merger announcement. On day -5, the increasing trend in CAAR of the ultra-suspected firm is more perceptible and moreover, it increases more rapidly than before. The CAAR of the suspected firm does not have any buildups before or on the announcement day.

Figure 5.46: The AT of the clean and the ultra-ultra-suspected firms in the U.K 2006

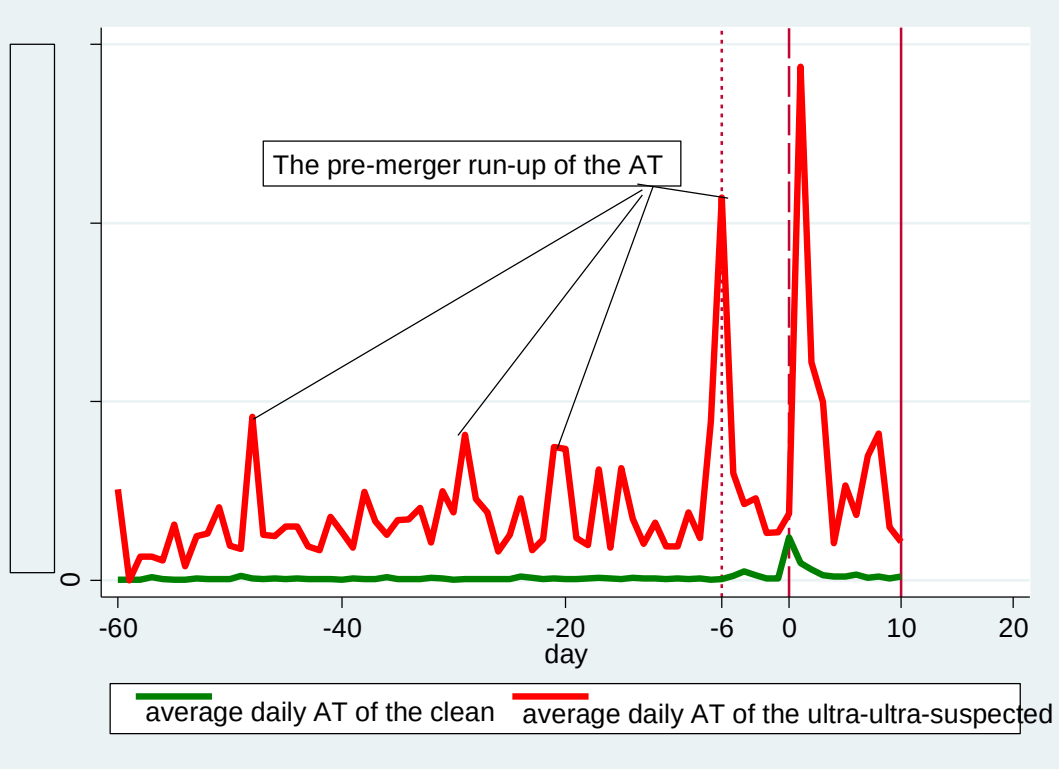
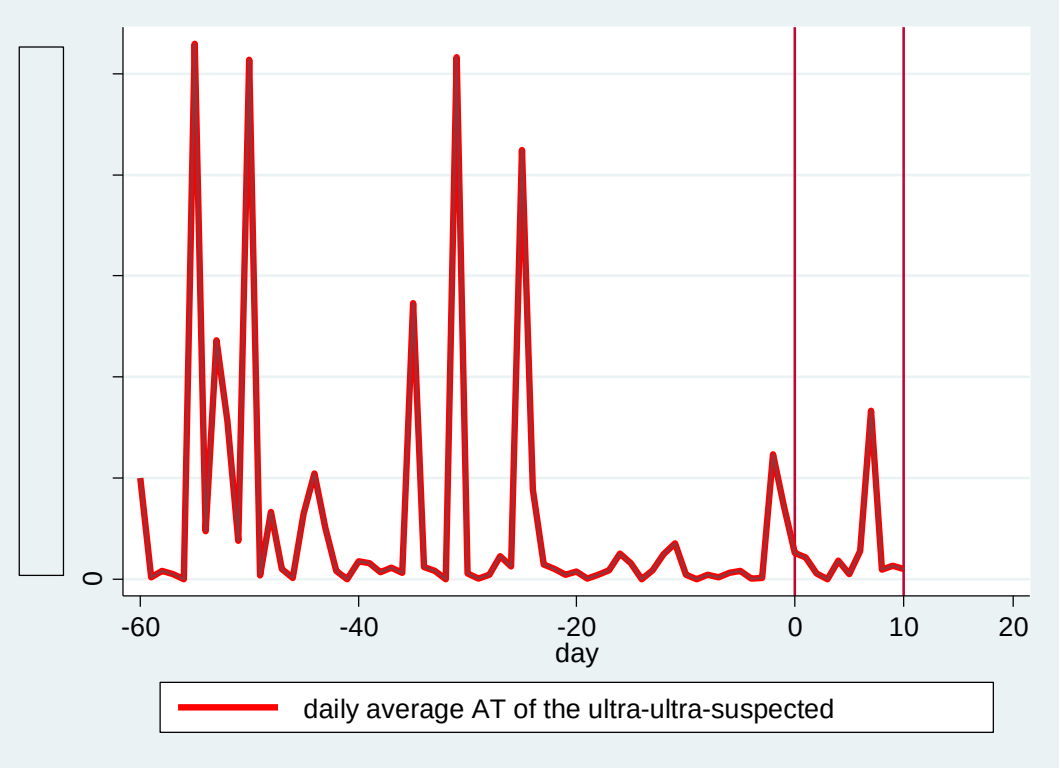


Figure 5.46 is the AT of the clean and the ultra-ultra-suspected firms relative to the merger announcement. It is pronounced that the AT of the ultra-ultra-suspected firms has several significant spikes before day 0. Furthermore, on day -6, a substantial AT up to more than 200,000,000 is observed. On the contrary, the AT of the clean firms remains stable before merger announcement. This is consistent with King (2009)'s finding that with the existence of insider trading, both massive AR and AT ahead of the announcement will be created.

Figure 5.47: The AT of the clean and the ultra-ultra-suspected firms in the U.K 2007



In 2007, there is no absolute clean firm, as a result, only the AT of the ultra-ultra-suspected firms is plotted in Figure 5.47. It is noticeable that from day -60 onwards, several spikes in the AT are observed. This is in accordance with the conclusion made by Jarrell and Poulsen (1989), Conrad and Niden (1993), Chae (2005) and Graham, Koski and Loewenstein (2006). They found that the higher than normal AT can be observed several weeks or months ahead of the merger announcement.

Figure 5.48: The AT of the clean and the ultra-ultra-suspected firms in the U.K 2008

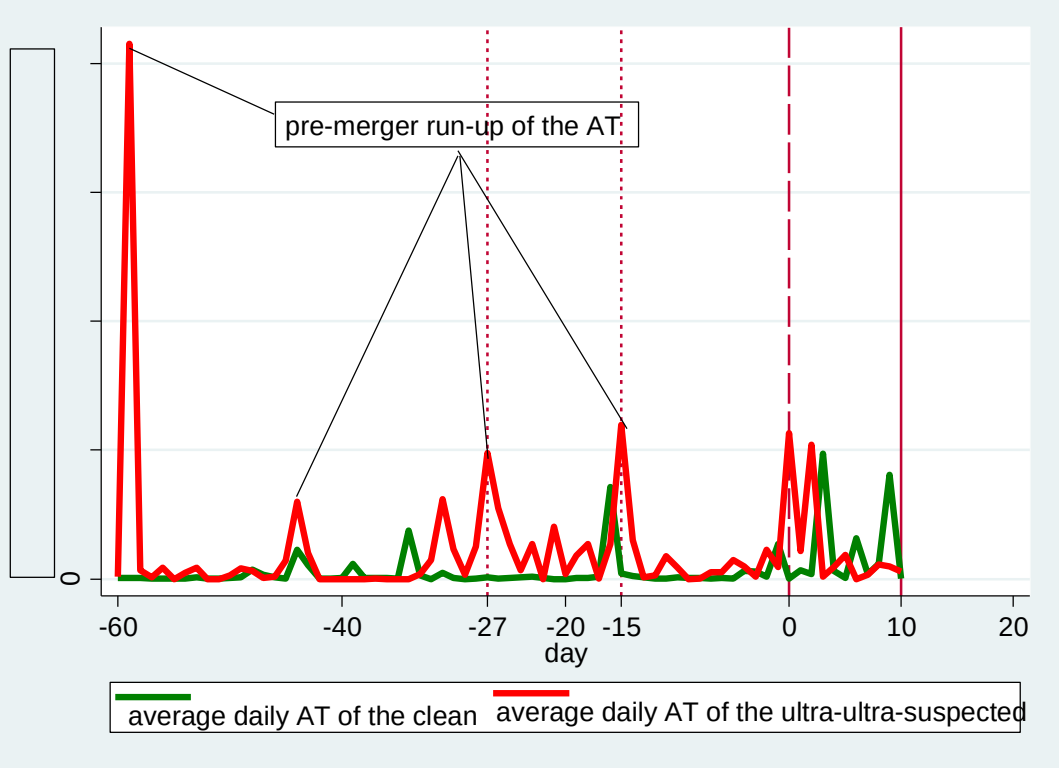


Figure 5.49: The AT of the clean and the ultra-ultra-suspected firms in the U.K 2009

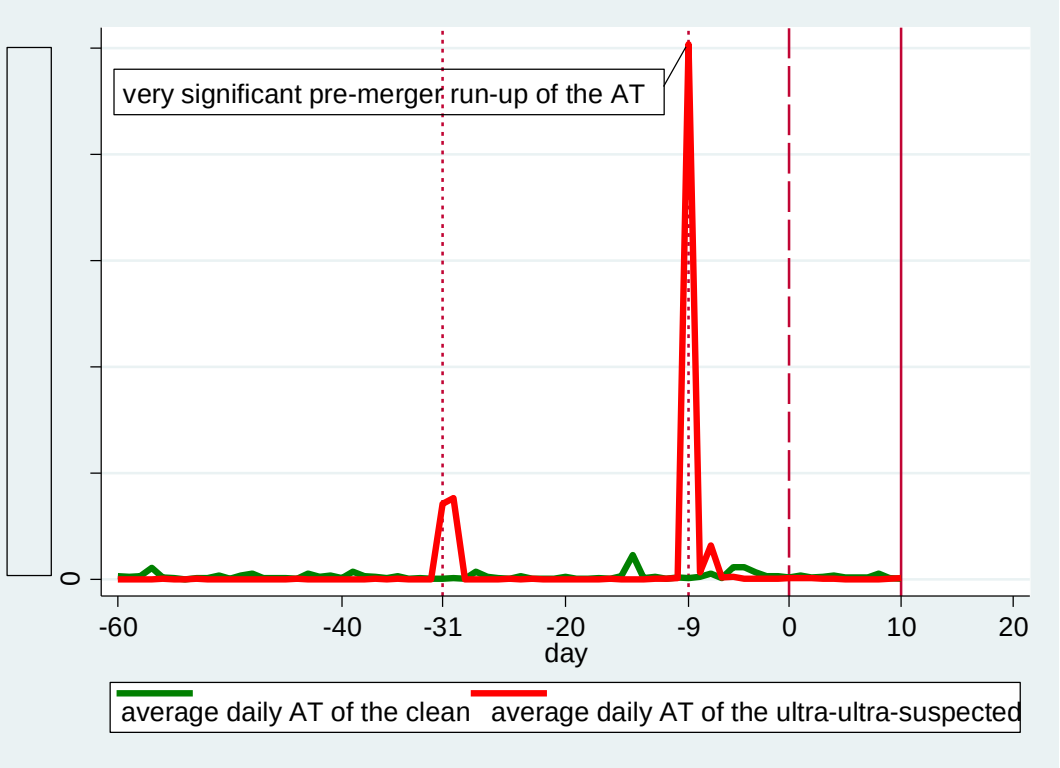
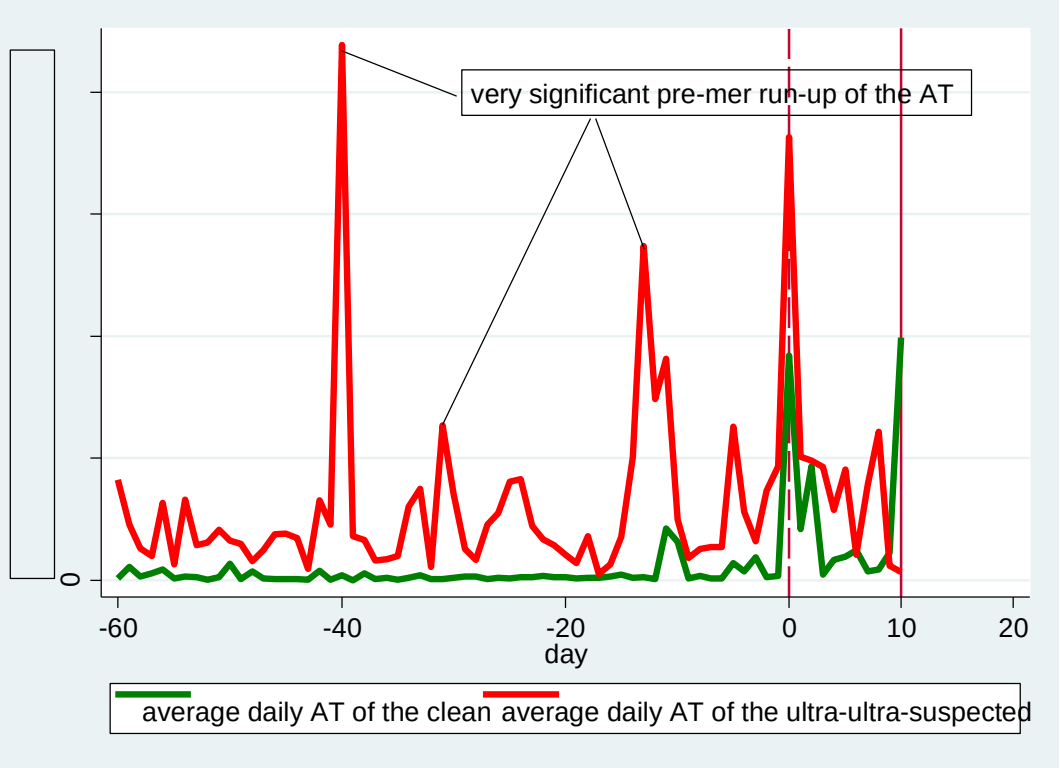


Figure 5.50: The AT of the clean and the ultra-ultra-suspected firms in the U.K 2010



According to Figures 5.48-5.50, the ATs of the ultra-ultra-suspected firms have very high spikes before the merger announcement while those of the clean firms seem to be more stable. The run-ups of the AT of the ultra-ultra-suspected are observed several weeks or months before the merger announcement. The finding in this study is consistent with the studies by the previous scholars, for example, King (2009), Jarrell and Poulsen (1989), Conrad and Niden (1993), Chae (2005) and Graham, Koski and Loewenstein (2006).

Section 5.3.12The results of Granger causality test in the targets and the bidders

Granger causality test tells us the linkages with inside traders. The insiders may first sell stocks in their own company to generate finance to buy shares in the target firm. On the other hand, the successful purchases of target firms' shares may lead to sales of the insiders' own shares if the shares were bought with borrowed money. Tables 5.56-60 show the results of Granger causality test for the targets and bidders in pair in

the U.K from 2006 to 2010. Tables 5.62-66 in the appendix give the results of the Augmented Dicky-Fuller (ADF) test for the targets and bidders in the U.K from 2006 to 2010. The results show that all the targets and bidders are stationary.

Table 5.56: Granger causality test in the targets and bidders in U.K 2006

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
T0601/obscure	No	0.37	No	0.52
T0602/obscure	No	2.29	No	0.41
T0603/clean	No	0.60	No	0.67
T0604/ultra-ultra-suspected	No	1.47	No	0.72
T0605/ultra-suspected	No	0.60	No	0.64
T0606/obscure with lagged news	No	0.82	No	0.84
T0607/ultra-suspected	No	2.03	No	0.80
T0608/ultra-suspected	No	0.26	No	0.12
T0609/suspected	Yes (5%)	4.44	No	0.40
T0610/ultra-suspected	No	0.08	No	0.47
T0611/ultra-suspected	No	0.46	No	0.82
T0612/clean	No	1.41	No	0.30
T0613/ultra-suspected	No	0.07	Yes (10%)	2.96
T0614/clean	No	0.43	Yes (1%)	6.63
T0615/suspected	No	0.88	No	1.52
T0616/suspected	Yes (10%)	2.35	No	0.51
T0617/suspected	No	0.74	No	2.12
T0618/clean	No	0.54	No	0.05
T0619/clean	No	0.34	No	1.50

Source: Author's calculation

Table 5.57: Granger causality test in the targets and bidders in U.K 2007

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
T0701/ultra-suspected	No	2.18	No	1.07
T0702/ultra-suspected	No	2.09	No	0.36
T0703/ultra-suspected	No	0.17	Yes (5%)	3.94
T0704/suspected	No	0.86	No	0.12
T0705/ultra-suspected	No	0.29	No	0.36
T0706/suspected	No	0.39	No	2.26
T0707/suspected	No	0.24	No	0.35
T0708/suspected	Yes (5%)	4.47	Yes (1%)	6.03
T0709/ultra-suspected	No	0.45	No	0.19
T0710/obscure	No	0.15	Yes (10%)	3.01
T0711/obscure	No	1.11	No	0.18
T0712/obscure	No	0.87	No	0.49
T0713/ultra-ultra-suspected	No	0.46	Yes (10%)	2.38

T0714/ultra-suspected	No	1.96	No	0.14
T0715/ultra-suspected	No	0.40	Yes (1%)	8.66
T0716/suspected	No	0.66	No	0.87

Source: Author's calculation

Table 5.58: Granger causality test in the targets and bidders in U.K 2008

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
T0801/suspected	No	0.96	No	0.30
T0802/ultra-suspected	No	0.67	No	1.65
T0803/suspected	No	0.95	No	2.02
T0804/clean	No	1.71	No	0.46
T0805/obscure with lagged news	No	0.81	No	0.03
T0806/obscure	No	2.10	No	0.55
T0807/ultra-suspected	No	0.18	No	0.91
T0808/obscure	No	0.11	No	0.59
T0809/ultra-suspected	No	1.21	No	0.58
T0810/clean	No	0.76	Yes (10%)	2.76
T0811/obscure	No	2.03	Yes (10%)	3.02
T0812/ultra-suspected	Yes (10%)	2.49	No	0.36
T0813/ultra-suspected	No	0.58	No	1.20
T0814/ultra-ultra-suspected	No	2.24	Yes (1%)	5.82
T0815/suspected	No	0.28	No	0.33
T0816/clean	Yes (10%)	2.38	No	0.52
T0817/ultra-suspected	No	0.60	Yes (10%)	3.04

Source: Author's calculation

Table 5.59: Granger causality test in the targets and bidders in U.K 2009

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
T0901/ultra-ultra-suspected	No	0.25	No	0.69
T0902/ultra-suspected	No	0.44	Yes (5%)	4.70
T0903/suspected	Yes (10%)	2.44	No	0.13
T0904/suspected	No	1.90	No	0.36
T0905/suspected	No	0.19	No	1.31
T0906/ultra-suspected	No	1.38	No	0.45
T0907/ultra-suspected	No	1.55	No	0.64
T0908/ultra-suspected	No	0.33	Yes (5%)	4.71
T0909/clean	No	0.12	No	1.87
T0910/suspected	No	0.24	No	0.57
T0911/suspected	Yes (5%)	4.57	No	1.20
T0912/suspected	No	0.02	No	0.25
T0913/ultra-suspected	No	0.92	No	0.69
T0914/ultra-ultra-suspected	Yes (1%)	7.13	Yes (10%)	2.81
T0915/ultra-suspected	No	0.39	No	2.32

T0916/suspected	No	1.77	No	0.55

Source: Author's calculation

Table 5.60: Granger causality test in the targets and bidders in U.K 2010

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
T1001/suspected	Yes (5%)	3.35	No	1.56
T1002/ultra-suspected	No	0.15	No	0.49
T1003/ultra-suspected	Yes (10%)	2.48	No	1.39
T1004/ultra-suspected	No	0.47	No	0.10
T1005/ultra-ultra-suspected	No	0.08	No	1.41
T1006/clean	No	0.18	No	0.05
T1007/suspected	Yes (5%)	3.84	No	2.21
T1008/clean	No	0.35	No	0.14
T1009/suspected	No	0.42	No	0.84
T1010/suspected	No	0.25	No	0.97
T1011/ultra-suspected	No	0.63	No	1.97
T1012/clean	No	0.52	No	0.01
T1013/clean	No	0.94	No	0.43
T1014/clean	No	0.05	No	0.46
T1015/ultra-ultra-suspected	No	0.48	No	0.12
T1016/suspected	No	0.03	No	1.50
T1017/ultra-suspected	No	1.58	Yes (1%)	6.32
T1018/ultra-ultra-suspected	No	0.32	No	1.08

Source: Author's calculation

Table 5.61: The descriptive statistics of the result of the Granger causality test in U.K

Descriptive statistic		
Numbers of target firms Granger cause bidder firms (10%)[24]		Numbers of bidder firms Granger cause target firms (10%)
2006	1/19[25]	1/19
2007	2/16	0/16
2008	3/18	2/18
2009	1/16	1/16
2010	0/18	1/18
Total	7/87	5/87
Numbers of target firms Granger cause bidder firms (5%)		Numbers of bidder firms Granger cause target firms (5%)
2006	0/19	1/19
2007	1/16	1/16

[24] The percentage number in the parentheses is the significance level of the Granger causality test.

[25] The denominator is the total number of firms in that specific year.

2008	0/18	0/18
2009	2/16	1/16
2010	0/18	2/18
Total	3/87	5/87
Numbers of target firms Granger cause bidder firms (1%)		Numbers of bidder firms Granger cause target firms (1%)
2006	1/19	0/19
2007	2/16	0/16
2008	1/18	0/18
2009	0/16	1/16
2010	1/18	0/18
Total	5/87	1/87

Source: Author's calculation

According to the results of Granger causality test, there is some evidence that the targets Granger cause the bidders, and the bidders Granger cause the targets and mutual causality. I found the most prevalent cases happen on the suspected, the ultra-suspected and the ultra-ultra-suspected firms. Among the total 9 cases on the bidders Granger cause the targets, 5 of which are suspected firms, 2 are ultra-suspected firms, 1 is ultra-ultra-suspected and 1 is clean. On the other hand, among the total 15 cases of the target firms Granger cause the bidders, 7 are ultra-suspected firms, 3 are ultra-ultra-suspected firms, 1 is suspected, 2 are obscure and 2 are clean. This is suggestive that there are mutual causalities between the targets and bidders especially within the firms which are suspected of doing insider trading.

Table 5.67: The summary of the Granger causality test in the U.K firms

The direction of Granger causality	Absolute clean	Obscure	Obscure with lagged news	Suspected	Ultra-suspected	Ultra-ultra-suspected
Bidder → Target	1	0	0	5	2	1
Target → Bidder	2	2	0	1	7	3

Section 5.3.13The results of the application of the day 0 hypothesis

The day 0 abnormal return hypothesis suggests that on day 0, there will be a substantial abnormal return for the targets due to the substantial trade volume in the stock market. But with the existence of insider dealing, the abnormal return may be partially absorbed prior to the announcement date and as a result, on day 0, the abnormal return will be expected to be lower than in the normal situation. Here, I compare the day 0 AR of the firms of the six categories.

Table 5.68: The results of the day 0 hypothesis after four filters[26]

Year	The absolute clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	0.2965561	0.0661174	-0.0022799	0.0208337	0.0098004	0.018017
2007	-	0.0918104	-	0.0967968	0.1450495	0.0091121
2008	0.282932	0.0572395	-0.0248121	0.088181	0.1223371	0.2274815
2009	-0.014199	-	-	0.0787821	0.0992894	0.1253302
2010	0.4365423	-	-	0.0680473	0.0611894	0.1238359
Average	0.250458	0.071722	-0.01355	0.070528	0.087533	0.100755

Source: Author's calculation

Table 5.69: The results of the day 0 hypothesis in ratio after four filters[27]

Year	The absolute clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	297.5%	28.9%	-1.28%	-20.2%	5.1%	33.4%
2007	-	22.8%	-	879.2%	34.1%	11.4%
2008	306.5%	40.0%	-13.9%	67.4%	46.6%	17.2%
2009	-5.3%	-	-	34.8%	57.2%	43.0%
2010	672.1%	-	-	205.9%	15.5%	45.8%
Average	317.7%	30.57%	-0.076%	233.42%	31.7%	30.16%

Source: Author's calculation

[26] The numbers in Table 5.68 are the average AR for all the six categories of firms on day 0 from 2006 to 2010

[27] The percentage numbers in Table 5.69 are calculated as the difference of the CAAR on day 0 and the CAAR on day -1 over the CAAR on day 0.

According to Tables 5.68, the day 0 abnormal returns of the clean firms are much higher than those of the suspected firms except in the year 2009. There was just one clean firm in 2009 (T0909) and the main business of T0909 was natural resources. The reasons for it experiencing negative day 0 AR might be firstly, in 2009, the economic crisis worsen which affected the investors' confidence in the stock market and therefore, the entire stock market was in a downturn. Secondly, the national natural resource workers went on strike which significantly affected the share prices of the firms in the natural resource industry. Table 5.68 gives the ratio of the increase on day 0 to that from day -60 to day 0. This is the total gain from the merger and the day 0 gain that realised on the day of the merger announcement. According to Table 5.69, the absolute clean firms have very high day 0 return except for the year 2009. In 2010, the absolute clean firms have up to 672.1% day 0 return. On the contrary, the ultra-ultra-suspected firms have much less day 0 return than the clean firms.

Table 5.70: Test for Equality of Means between Series

Method	Degree of freedom	Value	Probability
t-test	85	2.042547	0.0442
Anova F-test	(1, 85)	4.171999	0.0442
Satterthwaite-Welch-test	52.49944	1.898216	0.0632
Welch F-test	(1, 52.4994)	3.603224	0.0632

Source: Author's calculation

In applying test for equality of means between series, both t-test and Anova F-test prove that the result of the day 0 hypotheses is significant. (5% significance level) And Satterthwaite-Welch test and Welch F-test suggest significance under 10% level.

Table 5.71: Test for Equality of Variance between Series

Method	Degree of freedom	Value	Probability
F-test	(48, 37)	3.665857	0.0001
Bartlett	1	17.20390	0.0000

Source: Author's calculation

In applying both F-test and Bartlett test, it is proved that the result of the day 0 hypotheses is highly significant. (1% significance level)

Section 5.4 Conclusion

In Chapter 5, the investigation is based on a database of firms for which the merger announcement date has been announced during 2006-2010. The analysis has been done for 180 trading days prior to the announcement and 11 days on and after the announcement date. For examining the pattern of the stock prices, AR and CAAR have been calculated for the sample. Firstly, the AR and the CAAR are plotted. The previous literature assumes that when there is no existence of insider trading, both the AR and CAAR would fluctuate randomly about zero. However, if there is suspected trading going underneath, AR would show up some positive spikes and the CAAR would be observed on an increasing trend ahead of the merger announcement. After plotting the ARs and CAARs of the U.K target firms from 2006 to 2010, one can observe from the graphs that there are signs of insider trading in all five years with positive spikes in the ARs and buildups in the CAAR. This chapter utilizes four filters to detect the possible existence of informed trading prior to merger announcement. The four filters are the market model with daily dummy variables approach[28], the news search for the possible publicly released rumours prior to merger announcement, the investigation of outliers and the analysis of the trading volume pattern. With the first filter, the daily dummy variables show the separate single days on which there are positive abnormal returns. Nonetheless, after categorizing them as either 'suspected' or 'clean' according to the dummy variable approach, the graphs of the 'clean' firms show that they are not so 'clean' with spikes before the announcement day. This might be attributed to the fact that insider trading is more of a series of days' activity than several separate single days' because the insider trader may tend to do trading on adjacent days to avoid single suspicious spikes. But because of this way of doing insider trading, the insider trader may lose from news leaking out. Although noise in the system might mean that the daily dummy variable is not that suited to picking up a single spike, however, some people may still do insider trading in one day. As a result, the dummy variable approach is still needed as the first filter with more filters to support its results.

[28] The market adjusted and the modified market model give the same results as the market model does though some slight differences with the numbers.

Hirshleifer (1971) and Fama and Laffer (1971) argued that those who possess privileged information have an incentive to take market positions on the basis of their information and then announce their information publicly. Furthermore, there is a possibility that the insiders would leak negative information before they intend to buy the shares and positive news afterwards to get a larger profit. Either of these assumptions raises the importance of a news search. With this filter, all publicly released rumours for each target are searched with Nexis. Then the firms are re-categorized as 'clean', 'obscure' 'obscure with lagged news' and 'suspected'. The third filter is to detect the outliers. The idea is to find out the residuals which are 3.5 or 4 times greater than the standard deviation. Daily dummy variables are also included for the significance of the outliers. The results from the news search are also used for the re-categorization. The suspected firms with news release less than or equal to five days ahead of the problematic days are classified as 'obscure' and the suspected firms with news release less than or equal five days after the problematic days as 'obscure with lagged news'.

The last filter is the analysis of the abnormal turnover (AT). Many previous works have found that accompanied by the run-ups in the AR, there are also run-ups in the AT. In this thesis, the average AT for a period from -180 to -61 day is taken as the benchmark because the AT during this period is free from being contaminated by the event. The daily average turnover for each firm is compared with 1.25 multiplied by the benchmark, 1.50 multiplied by the benchmark and 2.0 multiplied by the benchmark. After this filter, the firms are categorized ultimately as the 'absolute clean', the 'obscure', the 'obscure with lagged news', the 'suspected', the 'ultra-suspected' and the 'ultra-ultra-suspected'.

In a sample of 87 firms being investigated, 17 are considered to be absolutely clean, 8 are considered obscure, 2 are obscure with lagged news, 24 are suspected, 30 are ultra-suspected and 8 are considered to be ultra-ultra-suspected. This is a small number of clean firms and a large number of suspected firms. Given the filters we have applied we can be fairly confident that relatively few of the clean firms will be anything other than clean. Not all of the suspected firms will be suspected, but there is substantial reason to suppose that they should be examined in further detail to identify the nature of the trading which occurred.

Appendix

In the appendix, firstly, the ARs and CAARs for both the targets and bidders in the U.K from 2006 to 2010 from the market-adjusted model and from the modified market model are presented. Secondly, the results of the ADF test in the targets and bidders in the U.K from 2006 to 2010 are shown. Thirdly, the names, the announcement dates and the industries of both the targets and bidders in the U.K from 2006 to 2010 are presented. Furthermore, the names and the days on which the firms have abnormal returns in the U.K from 2006 to 2010 are shown in tables.

Table 5.14: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2006(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.010083	0.0262	0.000682	53%	0.010083
-59	0.005207	0.01619	-0.0012	37%	0.01529
-58	-0.00394	-0.00462	-0.00355	37%	0.011347
-57	0.002289	-0.00035	0.003829	58%	0.013637
-56	-0.00249	0.00241	-0.00535	47%	0.011144
-55	0.002954	0.000597	0.004329	42%	0.014098
-54	-0.00274	0.003023	-0.00609	42%	0.011362
-53	-0.00113	0.001116	-0.00244	58%	0.010235
-52	0.003214	0.000252	0.004943	53%	0.01345
-51	-0.00028	0.002811	-0.00209	47%	0.013166
-50	0.004534	0.003887	0.004912	58%	0.0177
-49	-0.00556	-0.00479	-0.00601	42%	0.012137
-48	-0.00015	-0.00157	0.000676	42%	0.011985
-47	6.93E-05	-0.00776	0.004639	47%	0.012054
-46	0.001283	-0.00188	0.003128	53%	0.013337
-45	-0.00224	-0.00599	-5.1E-05	21%	0.011099
-44	-0.00244	-0.00244	-0.00243	26%	0.008663
-43	-0.00136	0.000928	-0.0027	42%	0.0073
-42	-0.00067	0.000485	-0.00135	53%	0.006628
-41	-0.00943	-0.00073	-0.0145	26%	-0.0028
-40	0.003076	0.009706	-0.00079	47%	0.000273
-39	-0.00081	0.001087	-0.00192	47%	-0.00054
-38	0.005065	-0.00067	0.008411	68%	0.004523
-37	-0.01653	-0.01218	-0.01907	42%	-0.01201
-36	-0.00649	-0.00357	-0.00819	42%	-0.0185
-35	-0.00018	0.001376	-0.00109	47%	-0.01868

-34	0.002488	3.72E-06	0.003937	47%	-0.01619
-33	-0.00083	0.003733	-0.00349	47%	-0.01702
-32	-0.00081	0.000804	-0.00175	53%	-0.01783
-31	0.006313	0.027582	-0.00609	58%	-0.01152
-30	0.005904	0.001597	0.008416	42%	-0.00561
-29	0.003777	0.008177	0.00121	37%	-0.00183
-28	-0.00154	-0.00309	-0.00064	42%	-0.00337
-27	0.002801	0.014216	-0.00386	53%	-0.00057
-26	-0.00389	-0.01671	0.003593	53%	-0.00446
-25	0.002378	-0.00192	0.004888	42%	-0.00208
-24	0.005255	0.01072	0.002068	47%	0.003174
-23	0.005107	0.019584	-0.00334	63%	0.008281
-22	0.006676	0.02539	-0.00424	47%	0.014957
-21	0.015337	0.042232	-0.00035	47%	0.030294
-20	-0.00715	-0.01307	-0.0037	37%	0.023142
-19	-0.00955	-0.00861	-0.0101	21%	0.013594
-18	-0.00313	-0.00735	-0.00067	32%	0.010464
-17	-0.00142	0.006497	-0.00603	58%	0.009046
-16	-0.0007	-0.00108	-0.00047	53%	0.00835
-15	0.003608	-0.00109	0.006351	53%	0.011958
-14	0.004248	0.000872	0.006218	58%	0.016207
-13	-0.00366	-0.00791	-0.00118	37%	0.012548
-12	-0.00513	-0.01158	-0.00137	21%	0.007415
-11	-0.00166	-0.00372	-0.00045	42%	0.005758
-10	0.003128	0.006818	0.000975	37%	0.008886
-9	0.005325	0.006368	0.004716	58%	0.01421
-8	0.011805	0.026507	0.00323	53%	0.026016
-7	-0.01204	-0.02275	-0.0058	32%	0.013972
-6	0.002935	0.004999	0.001731	53%	0.016907
-5	-0.00298	-0.00245	-0.00329	53%	0.01393
-4	0.005085	0.007694	0.003563	79%	0.019015
-3	0.001793	-0.00109	0.003474	63%	0.020807
-2	0.004522	0.007426	0.002827	42%	0.025329
-1	0.010001	0.030583	-0.002	47%	0.03533
0	0.092431	0.016291	0.136846	68%	0.127761
1	0.006513	0.00419	0.007868	79%	0.134274
2	-0.00068	-0.00259	0.000426	53%	0.133589
3	-3.1E-05	-0.00084	0.00044	37%	0.133558
4	0.00883	-0.00298	0.01572	53%	0.142388
5	0.002541	0.007558	-0.00039	68%	0.144928
6	0.003657	0.000962	0.005229	47%	0.148585
7	0.002185	-0.00122	0.004173	42%	0.15077
8	0.004538	0.00401	0.004845	58%	0.155308
9	-0.00208	-0.00176	-0.00227	37%	0.153229
10	0.003842	-0.00022	0.00621	47%	0.157071
Average from day -60 to -6	0.000307442	0.002377049	-0.00089944	-	0.006394182
Average from	0.000248738	0.002290852	-0.00094213	-	0.00652875

day -60 to -5					
Average from day -60 to -1	0.000588838	0.002881679	-0.00074825	-	0.007768183
Average from day -60 to +1	0.002165715	0.00311906	0.001609984	-	0.011743968
Average from day -60 to +10	0.002212342	0.002764813	0.001890169	-	0.028838761

Table 5.15: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2007(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.010811	0.013486	0.002788	69%	0.010811
-59	0.007725	0.010485	-0.00055	50%	0.018537
-58	-0.00349	0.000458	-0.01534	38%	0.015045
-57	0.035604	0.042571	0.014704	50%	0.050649
-56	0.012444	0.013839	0.008259	50%	0.063093
-55	0.023124	0.026752	0.012242	69%	0.086217
-54	0.005689	0.004341	0.009734	63%	0.091906
-53	0.00153	-0.00031	0.007062	44%	0.093436
-52	-0.00408	-0.00701	0.004688	19%	0.089354
-51	-0.00294	-0.00789	0.011929	44%	0.086415
-50	0.000287	-0.00208	0.007394	44%	0.086702
-49	0.006081	0.00891	-0.00241	56%	0.092783
-48	-0.0026	-0.00662	0.00944	69%	0.090179
-47	0.004177	0.004789	0.002342	69%	0.094356
-46	-0.0039	-0.00082	-0.01315	25%	0.090455
-45	0.010128	-0.00306	0.0497	31%	0.100582
-44	0.00134	0.00472	-0.0088	50%	0.101922
-43	-0.00225	-0.00068	-0.00694	50%	0.099675
-42	0.001328	0.003452	-0.00504	63%	0.101003
-41	-0.00094	-0.00542	0.012513	31%	0.100065
-40	-0.00478	0.000387	-0.02028	56%	0.095285
-39	0.003561	0.003529	0.003657	63%	0.098845
-38	0.003347	0.004606	-0.00043	38%	0.102192
-37	0.007532	0.006606	0.01031	50%	0.109724
-36	-0.00279	-0.00293	-0.00235	31%	0.106936
-35	-0.00214	-0.00455	0.00508	63%	0.104796
-34	0.012598	0.015842	0.002868	50%	0.117394
-33	0.006257	0.005122	0.009659	50%	0.123651

-32	0.004312	0.001247	0.013506	38%	0.127963
-31	-0.00942	-0.01135	-0.00362	44%	0.118546
-30	0.004563	0.005766	0.000951	63%	0.123109
-29	0.00104	-0.00155	0.008817	50%	0.124149
-28	-0.00943	-0.01252	-0.00016	31%	0.114718
-27	0.002004	0.007087	-0.01324	63%	0.116723
-26	-0.00502	-0.00325	-0.01031	19%	0.111706
-25	0.006814	0.006714	0.007116	75%	0.11852
-24	0.002861	0.000744	0.009214	56%	0.121381
-23	0.010251	0.007577	0.018273	63%	0.131633
-22	-0.00088	0.002824	-0.01201	31%	0.130749
-21	0.002052	0.004537	-0.0054	44%	0.1328
-20	-0.01188	-0.01461	-0.0037	25%	0.120918
-19	5.87E-05	-0.00094	0.003058	50%	0.120977
-18	0.01304	0.016107	0.003839	69%	0.134016
-17	-0.0071	-0.00912	-0.00104	31%	0.126919
-16	-0.00387	-0.00577	0.001833	50%	0.123051
-15	-0.00572	-0.00878	0.003438	38%	0.117326
-14	0.000453	0.002583	-0.00593	31%	0.117779
-13	0.005966	0.010776	-0.00846	44%	0.123745
-12	0.000384	-0.00165	0.006485	44%	0.124128
-11	0.000581	-0.00254	0.009929	31%	0.124709
-10	0.0004	0.001682	-0.00345	44%	0.125108
-9	0.000719	-4.51E-06	0.00289	44%	0.125828
-8	0.003478	0.005367	-0.00219	38%	0.129306
-7	-0.00037	0.004685	-0.01554	38%	0.128935
-6	0.003338	0.004267	0.000549	50%	0.132273
-5	-0.00538	-0.00814	0.002887	63%	0.126893
-4	0.009334	0.014387	-0.00583	63%	0.136226
-3	0.018699	0.020825	0.012322	56%	0.154926
-2	-0.00076	0.001981	-0.00897	25%	0.154167
-1	0.086329	0.107608	0.022492	63%	0.240496
0	0.115026	0.115068	0.114898	81%	0.355522
1	-0.00179	-0.00267	0.000858	38%	0.353737
2	0.01268	0.018469	-0.00469	50%	0.366417
3	0.003479	-0.00029	0.014781	63%	0.369896
4	-0.00377	-0.00599	0.002862	25%	0.366121
5	-0.00567	-0.00492	-0.0079	38%	0.360456
6	-0.00359	-0.00303	-0.00525	38%	0.356869
7	0.002043	0.00512	-0.00719	44%	0.358911
8	-0.00085	0.00138	-0.00752	38%	0.358065
9	-0.00229	-0.00401	0.002877	44%	0.355775
10	-0.00441	-0.00541	-0.00142	50%	0.351364
Average from day -60 to -6	0.002405049	0.005475796	0.0020714	-	0.104891327
Average from day -60 to -5	0.00226603	0.002326134	0.002085964	-	0.105284214

Average from day -60 to -1	0.004008328	0.004594408	0.002280467	-	0.109695517
Average from day -60 to +1	0.005705415	0.006249395	0.004073935	-	0.117596613
Average from day -60 to +10	0.0049487	0.005475796	0.003368085	-	0.148398366

Table 5.16: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2008(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00167	0.001748	-0.0051	50%	-0.00167
-59	-0.01644	-0.01471	-0.01816	11%	-0.01811
-58	-7.4E-05	0.004497	-0.00465	50%	-0.01819
-57	-0.00394	-0.00282	-0.00507	44%	-0.02213
-56	-0.00565	0.008051	-0.01935	33%	-0.02778
-55	0.016868	0.017902	0.015833	56%	-0.01091
-54	0.007654	0.012558	0.002751	56%	-0.00326
-53	-0.02343	-0.0265	-0.02037	11%	-0.02669
-52	-0.00683	-0.00162	-0.01204	39%	-0.03352
-51	0.011064	0.018919	0.00321	56%	-0.02245
-50	0.00386	0.025929	-0.01821	44%	-0.01859
-49	0.001919	-0.00088	0.004715	61%	-0.01667
-48	0.005539	0.029598	-0.01852	61%	-0.01113
-47	0.001115	0.005947	-0.00372	67%	-0.01002
-46	-0.00348	-0.01303	0.006064	56%	-0.0135
-45	-0.00346	0.000578	-0.0075	61%	-0.01696
-44	-0.00232	-0.00517	0.000524	44%	-0.01929
-43	-0.00088	-0.00306	0.0013	61%	-0.02017
-42	-0.03775	-0.07509	-0.00041	44%	-0.05792
-41	-0.00663	-0.02018	0.006918	33%	-0.06455
-40	-0.00913	-0.03052	0.012261	44%	-0.07368
-39	-0.00308	-0.00621	5.07E-05	61%	-0.07676
-38	-0.01526	-0.03478	0.004261	44%	-0.09202
-37	-0.01513	-0.03054	0.000275	33%	-0.10716
-36	0.00208	-0.01441	0.018575	56%	-0.10508
-35	-0.0287	-0.03739	-0.02	44%	-0.13377
-34	-0.00936	-3.14E-02	0.012658	50%	-0.14313
-33	0.029148	0.071269	-0.01297	44%	-0.11398
-32	0.034446	0.066718	0.002174	78%	-0.07954
-31	-0.01791	-0.0375	0.001676	61%	-0.09745

-30	0.00549	0.019666	-0.00869	44%	-0.09196
-29	0.020592	0.037616	0.003569	56%	-0.07137
-28	-0.00335	-0.00111	-0.0056	44%	-0.07473
-27	0.001148	0.004251	-0.00195	33%	-0.07358
-26	0.02247	0.004202	0.040739	44%	-0.05111
-25	0.028937	-0.00973	0.067609	61%	-0.02217
-24	0.003528	0.006074	0.000981	56%	-0.01864
-23	0.015796	0.021012	0.010581	56%	-0.00285
-22	0.010532	0.012161	0.008904	44%	0.007687
-21	0.019354	-0.01542	0.054126	61%	0.027041
-20	-0.0061	-0.0025	-0.00971	56%	0.020936
-19	-0.00475	-0.01841	0.008906	44%	0.016186
-18	0.012067	0.029538	-0.0054	56%	0.028253
-17	-0.02531	-0.0198	-0.03081	33%	0.002946
-16	-0.00696	-0.01856	0.004643	28%	-0.00401
-15	0.018026	0.020059	0.015993	56%	0.014015
-14	0.004937	0.001425	0.00845	50%	0.018952
-13	0.007984	0.00438	0.011588	39%	0.026936
-12	-0.00088	0.017192	-0.01895	61%	0.026055
-11	0.005805	0.010456	0.001155	50%	0.03186
-10	-0.00059	-0.00301	0.001824	50%	0.031267
-9	0.009827	0.020824	-0.00117	44%	0.041094
-8	0.005644	0.005598	0.00569	56%	0.046738
-7	-0.0029	-0.0154	0.009596	50%	0.043835
-6	-0.00282	0.004817	-0.01046	50%	0.041012
-5	0.002211	0.006771	-0.00235	67%	0.043223
-4	0.007533	0.012951	0.002115	44%	0.050756
-3	0.01281	-0.00107	0.026691	61%	0.063566
-2	0.011454	-0.00118	0.024088	61%	0.07502
-1	0.03994	0.089482	-0.0096	61%	0.11496
0	0.136969	0.202053	0.071886	61%	0.251929
1	0.020847	0.005697	0.035997	50%	0.272776
2	-0.00045	0.00791	-0.00882	72%	0.272321
3	-0.00941	-0.0095	-0.00932	50%	0.262908
4	-0.02272	-0.00682	-0.03862	56%	0.240185
5	-0.00741	-0.03679	0.021975	50%	0.232777
6	-0.00261	-0.00344	-0.00177	78%	0.230172
7	-0.00898	-0.01473	-0.00324	44%	0.22119
8	-0.00435	0.002941	-0.01163	33%	0.216844
9	-0.01387	-0.0144	-0.01334	44%	0.202974
10	-0.01406	-0.01766	-0.01046	33%	0.188913
Average from day -60 to -6	0.000746291	-0.000123	0.001614358	-	-0.026212491
Average from day -60 to -5	0.000772446	1.07143E-07	0.001543566	-	-0.024972571
Average from	0.001916567	0.001669817	0.002162228	-	-0.018236033

day -60 to -1					
Average from day -60 to +1	0.004400161	0.004966758	0.003832527	-	-0.00918479
Average from day -60 to +10	0.002661268	0.003034507	0.002287207	-	0.021110239

Table 5.17: Daily average returns (A91R) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2009(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.00456	0.000368	0.00782	69%	0.00456
-59	-0.02049	-0.03657	-0.00798	38%	-0.01593
-58	-0.00841	0.002428	-0.01684	44%	-0.02434
-57	-0.00624	-0.01932	0.003926	50%	-0.03058
-56	-0.00216	-0.00297	-0.00152	44%	-0.03274
-55	-0.00188	-0.00991	0.00436	56%	-0.03462
-54	0.001115	-0.0116	0.011004	50%	-0.03351
-53	-0.07042	-0.03574	-0.0974	31%	-0.10393
-52	0.044757	-0.02018	0.095259	38%	-0.05917
-51	0.004127	-0.00747	0.013142	56%	-0.05504
-50	0.003715	0.009366	-0.00068	56%	-0.05133
-49	0.007737	0.029941	-0.00953	38%	-0.04359
-48	-0.00911	-0.01217	-0.00674	50%	-0.0527
-47	0.02387	0.021162	0.025976	69%	-0.02883
-46	0.023229	0.054927	-0.00142	63%	-0.00561
-45	0.085283	0.004635	0.14801	63%	0.079678
-44	0.014825	-0.01024	0.03432	38%	0.094503
-43	-0.01244	-0.01243	-0.01246	31%	0.082059
-42	0.00169	-0.00921	0.010166	44%	0.083748
-41	-0.00606	-0.01679	0.002289	38%	0.077692
-40	-0.00989	-0.01804	-0.00355	44%	0.067803
-39	0.013173	-0.00498	0.027293	63%	0.080977
-38	-0.00613	-0.03365	0.01527	25%	0.074844
-37	0.009596	0.010949	0.008544	38%	0.08444
-36	0.014658	0.052841	-0.01504	63%	0.099098
-35	0.01528	0.037629	-0.0021	38%	0.114378
-34	-0.02655	-3.78E-02	-0.01778	25%	0.087827
-33	0.000971	0.009051	-0.00531	44%	0.088799
-32	-0.00538	-0.01459	0.001783	44%	0.083418
-31	0.041017	0.108235	-0.01126	50%	0.124435

-30	-0.00199	-0.02177	0.013387	50%	0.122443
-29	-0.0031	0.000879	-0.0062	31%	0.119338
-28	0.000064	-0.00242	0.001996	50%	0.119402
-27	-0.00556	-0.01185	-0.00066	25%	0.113843
-26	0.010674	0.026254	-0.00144	44%	0.124517
-25	0.02118	0.046783	0.001267	56%	0.145697
-24	-0.01558	-0.04148	0.004556	31%	0.130113
-23	0.008919	-0.00233	0.017668	63%	0.139032
-22	-0.00966	-0.01198	-0.00786	44%	0.129372
-21	-0.00872	-0.02668	0.005246	44%	0.120651
-20	0.003158	0.003053	0.003239	56%	0.123809
-19	0.006718	0.000782	0.011334	50%	0.130526
-18	-0.00251	0.000568	-0.0049	38%	0.12802
-17	-0.00079	0.013355	-0.01179	63%	0.127233
-16	-0.0081	-0.00144	-0.01327	44%	0.119136
-15	-0.00414	0.005148	-0.01137	38%	0.114993
-14	0.00334	0.006318	0.001025	44%	0.118333
-13	0.011126	0.010897	0.011304	50%	0.129459
-12	0.003038	0.024255	-0.01347	38%	0.132496
-11	0.004561	0.01382	-0.00264	38%	0.137058
-10	-0.0127	-0.01243	-0.01291	31%	0.124361
-9	0.004783	0.026478	-0.01209	56%	0.129144
-8	0.009539	0.027045	-0.00408	63%	0.138683
-7	0.006264	-0.00082	0.011777	38%	0.144947
-6	-0.00629	-0.00327	-0.00863	25%	0.138659
-5	0.005155	-0.00715	0.014729	50%	0.143813
-4	0.012632	0.00525	0.018374	63%	0.156446
-3	0.004897	0.006347	0.003769	56%	0.161342
-2	0.014434	0.020435	0.009766	38%	0.175776
-1	0.012332	0.023566	0.003595	44%	0.188108
0	0.087288	0.131138	0.053182	69%	0.275396
1	-0.02327	-0.00628	-0.03648	38%	0.252131
2	0.027256	0.035543	0.020811	63%	0.279387
3	0.014902	0.032267	0.001397	69%	0.294289
4	0.004693	0.003913	0.0053	44%	0.298982
5	0.003579	-0.00247	0.008287	56%	0.302561
6	-0.00446	0.002007	-0.00949	31%	0.298101
7	0.003823	0.007618	0.000872	44%	0.301925
8	-0.00662	-0.0115	-0.00283	38%	0.295305
9	0.006161	-0.00051	0.011353	63%	0.301466
10	0.001393	0.003424	-0.00019	38%	0.302859
Average from day -60 to -6	0.002521218	0.001764309	0.003109836	-	0.071956436
Average from day -60 to -5	0.00256825	0.001605125	0.003317321	-	0.073239589
Average from	0.003135283	0.00242475	0.0036879	-	0.07971815

day -60 to -1					
Average from day -60 to +1	0.004066694	0.004360371	0.003838323	-	0.085655097
Average from day -60 to +10	0.004265662	0.004797676	0.003851915	-	0.112471704

Table 5.18: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.000709	0.00015	0.001268	56%	0.000709
-59	0.001377	0.008094	-0.00534	28%	0.002086
-58	0.006142	0.008444	0.00384	44%	0.008228
-57	-0.02998	-0.05027	-0.00969	28%	-0.02175
-56	0.010474	0.011562	0.009386	56%	-0.01128
-55	0.005176	-0.00394	0.014295	50%	-0.0061
-54	0.005714	0.004612	0.006817	67%	-0.00039
-53	0.002002	-0.00716	0.011161	61%	0.001615
-52	-0.02449	-0.04467	-0.00431	33%	-0.02288
-51	0.010634	0.035124	-0.01386	44%	-0.01224
-50	-0.00236	-0.00232	-0.0024	39%	-0.0146
-49	-0.00806	-0.01334	-0.00278	33%	-0.02267
-48	0.001967	-0.00017	0.004101	44%	-0.0207
-47	-0.00341	-0.01332	0.006493	56%	-0.02411
-46	0.001759	0.009686	-0.00617	39%	-0.02235
-45	-0.00798	-0.0153	-0.00066	50%	-0.03033
-44	0.005724	0.00634	0.005109	44%	-0.02461
-43	0.011006	0.009276	0.012736	61%	-0.0136
-42	0.000149	-0.00789	0.008186	39%	-0.01345
-41	-0.00914	0.000923	-0.0192	11%	-0.02259
-40	0.020165	0.035896	0.004435	50%	-0.00243
-39	-0.00058	-0.00721	0.006058	50%	-0.003
-38	-0.00121	-0.00083	-0.00159	44%	-0.00421
-37	-0.01992	-0.04074	0.000909	28%	-0.02413
-36	0.010883	0.001119	0.020648	67%	-0.01324
-35	-0.00795	-0.00914	-0.00675	33%	-0.02119
-34	0.007632	0.01614	-0.00087	50%	-0.01356
-33	-0.0094	-0.01517	-0.00364	39%	-0.02296
-32	0.002839	0.002322	0.003356	56%	-0.02012
-31	0.005256	0.005683	0.00483	39%	-0.01487

-30	0.016496	0.019145	0.013846	50%	0.001628
-29	1.06E-05	-0.00335	0.003372	50%	0.001639
-28	0.003436	-0.00196	0.008833	44%	0.005075
-27	0.002171	0.00542	-0.00108	50%	0.007247
-26	0.010444	0.006373	0.014515	61%	0.017691
-25	-0.00088	-0.00176	7.85E-07	39%	0.016812
-24	-0.00113	-0.00337	0.001113	56%	0.015682
-23	0.003918	-0.01832	0.026157	39%	0.019601
-22	-0.00239	-0.00534	0.000554	44%	0.017206
-21	0.005099	0.005152	0.005046	44%	0.022305
-20	0.008994	0.013739	0.004249	78%	0.031299
-19	0.001599	0.009522	-0.00633	56%	0.032898
-18	-0.00213	-0.00116	-0.0031	50%	0.030764
-17	-0.00428	-0.00861	6.26E-05	50%	0.026489
-16	0.01006	0.018524	0.001595	56%	0.036549
-15	0.002018	-0.00417	0.008204	28%	0.038567
-14	-0.00522	0.00365	-0.0141	22%	0.033344
-13	-0.00138	0.021364	-0.02412	39%	0.031966
-12	-0.00586	-0.0112	-0.00051	56%	0.026111
-11	-0.00261	-0.01804	0.012815	67%	0.023498
-10	-0.00336	-0.00652	-0.00021	44%	0.020133
-9	0.010838	0.005483	0.016192	50%	0.030971
-8	-0.00394	-0.001	-0.00689	39%	0.027028
-7	-0.0136	-0.02978	0.00258	39%	0.013427
-6	-0.00847	0.006705	-0.02364	28%	0.004961
-5	0.00218	0.002303	0.002057	56%	0.00714
-4	0.023102	0.042248	0.003955	56%	0.030242
-3	-0.00334	-0.00893	0.00224	28%	0.026899
-2	0.003961	0.008194	-0.00027	56%	0.030859
-1	0.065469	0.140304	-0.00937	56%	0.096328
0	0.180718	0.097878	0.263557	72%	0.277046
1	0.018405	0.030328	0.006482	44%	0.295451
2	0.088672	0.168459	0.008886	44%	0.384123
3	0.047193	0.088575	0.005812	56%	0.431316
4	-0.0189	-0.03197	-0.00584	39%	0.412412
5	-0.00812	-0.01961	0.003366	56%	0.404291
6	-0.00429	-0.01987	0.011287	44%	0.399997
7	-0.00849	-0.02037	0.003395	67%	0.391512
8	0.000517	0.002775	-0.00174	39%	0.392029
9	-0.00845	-0.00456	-0.01234	39%	0.383578
10	0.002248	0.003066	0.00143	56%	0.385826
Average from day -60 to -6	9.02109E-05	0.005679127	0.001554952	-	0.002221255
Average from day -60 to -5	0.000127529	0.001308911	0.001563918	-	0.002309089
Average from	0.00160556	0.001808617	0.00140224	-	0.005227283

day -60 to -1					
Average from day -60 to +1	0.004765429	0.003818113	0.005712474	-	0.014292484
Average from day -60 to +10	0.005434318	0.005679127	0.005189146	-	0.062974901

Table 5.20: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2006(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.001307	0.00443	-0.00013	47%	0.001307
-59	0.005325	0.007827	0.004171	42%	0.006633
-58	0.001586	-0.00801	0.006013	47%	0.008218
-57	-0.00197	-0.00126	-0.0023	53%	0.006245
-56	-0.00705	-0.01581	-0.00301	32%	-0.00081
-55	0.000884	0.001927	0.000402	37%	7.86E-05
-54	-0.00069	-0.00444	0.001034	32%	-0.00061
-53	-0.00453	0.001572	-0.00735	21%	-0.00515
-52	0.011377	0.013543	0.010378	53%	0.00623
-51	0.010395	0.030596	0.001071	47%	0.016625
-50	-0.00493	-0.01096	-0.00215	42%	0.011694
-49	0.012221	0.054354	-0.00722	37%	0.023915
-48	-0.00551	-0.01742	-1.1E-05	32%	0.018407
-47	-0.00518	-0.01178	-0.00213	32%	0.013226
-46	0.003628	0.005313	0.00285	53%	0.016853
-45	-0.00253	-0.00232	-0.00263	47%	0.014325
-44	-0.00734	-0.01166	-0.00535	26%	0.006985
-43	-0.00984	-0.02382	-0.00339	32%	-0.00286
-42	-0.00641	-0.00643	-0.00639	37%	-0.00926
-41	-0.0078	-0.02627	0.000725	32%	-0.01706
-40	0.001827	-0.00563	0.005268	37%	-0.01524
-39	0.003443	-0.00374	0.00676	26%	-0.01179
-38	6.83E-05	0.011943	-0.00541	37%	-0.01172
-37	-0.00532	-0.00736	-0.00438	42%	-0.01704
-36	0.00083	0.003918	-0.00059	47%	-0.01621
-35	0.005913	0.018321	0.000186	37%	-0.0103
-34	-0.00031	-0.00585	0.002251	47%	-0.01061
-33	-0.00403	-0.01115	-0.00075	47%	-0.01464
-32	0.005194	-0.0063	0.0105	53%	-0.00945

-31	-0.00305	-0.00659	-0.00142	21%	-0.0125
-30	0.003624	0.011409	0.000031	42%	-0.00888
-29	-0.00152	0.004324	-0.00422	37%	-0.0104
-28	-0.00023	0.003878	-0.00212	47%	-0.01062
-27	-0.00239	-0.00882	0.000572	32%	-0.01302
-26	0.001954	0.00461	0.000728	47%	-0.01106
-25	0.002234	0.010994	-0.00181	37%	-0.00883
-24	-0.00955	-0.02906	-0.00054	42%	-0.01838
-23	0.000338	0.000113	0.000442	58%	-0.01804
-22	0.004721	0.012392	0.001181	63%	-0.01332
-21	-0.00049	-0.00976	0.003797	63%	-0.0138
-20	-0.00497	0.005503	-0.0098	37%	-0.01877
-19	-0.00381	-0.01461	0.001166	37%	-0.02258
-18	-0.00167	-0.00604	0.00034	58%	-0.02426
-17	0.006923	0.033338	-0.00527	47%	-0.01734
-16	0.015467	0.049493	-0.00024	47%	-0.00187
-15	-0.01471	-0.02953	-0.00788	32%	-0.01658
-14	-0.01286	-0.03653	-0.00194	32%	-0.02945
-13	-0.0026	-0.00759	-0.0003	37%	-0.03205
-12	-0.00834	-0.02221	-0.00195	32%	-0.04039
-11	-0.00257	-0.0085	1.63E-04	47%	-0.04296
-10	0.010291	0.025537	0.003254	42%	-0.03267
-9	-0.00241	-0.00038	-0.00335	42%	-0.03508
-8	-4.70E-06	0.00388	-0.0018	37%	-0.03509
-7	-0.00654	-0.01853	-0.00101	32%	-0.04163
-6	-0.0018	-0.00494	-0.00035	32%	-0.04342
-5	-0.00241	-0.00274	-0.00226	37%	-0.04584
-4	0.00129	-1.93E-03	0.002777	63%	-0.04455
-3	-0.00201	-0.00141	-0.00229	47%	-0.04656
-2	-0.00054	-0.00572	0.001851	32%	-0.0471
-1	-0.00414	-0.0068	-0.00292	37%	-0.05124
0	-0.00903	-0.01402	-0.00672	32%	-0.06027
1	0.000796	0.002775	-0.00012	53%	-0.05947
2	-0.00295	-0.00888	-0.00021	26%	-0.06243
3	-9.3E-05	-0.01043	0.00468	32%	-0.06252
4	0.001526	-0.00555	0.004792	58%	-0.06099
5	0.002221	-0.00972	0.007732	47%	-0.05877
6	-0.00062	-0.00982	0.003629	37%	-0.05939
7	0.002945	-0.00344	0.00589	53%	-0.05644
8	-0.00169	-0.00968	0.002	37%	-0.05813
9	0.002252	0.006578	0.000256	63%	-0.05588
10	0.000751	-0.00736	0.004496	47%	-0.05513
Average from day -60 to -6	-0.000789171	-0.001165182	-0.000616509	-	-0.020559273
Average from day -60 to -5	-0.000818114	-0.001193304	-0.000645857	-	-0.0110864
Average	-	-	-0.0006125	-	-0.013504807

from day -60 to -1	0.000853573	0.001378083			
Average from day -60 to +1	-0.000958845	-0.001193304	-0.000703065	-	-0.015000458
Average from day -60 to +10	-0.000776146	-0.002144113	-0.000145423	-	-0.020559273

Table 5.21: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2007(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00383	0.00615	0.002293	50%	-0.00383
-59	0.000212	-0.00198	0.004916	44%	-0.00362
-58	0.006255	0.008309	-0.00587	63%	0.002632
-57	-0.00368	-0.00484	-0.00083	56%	-0.00105
-56	0.002893	-0.00292	-0.01201	56%	0.001847
-55	-5.37E-06	0.001508	-0.0002	38%	0.001841
-54	0.000504	0.000544	-0.00329	56%	0.002346
-53	-0.00612	-0.00251	-0.00218	38%	-0.00378
-52	-0.00144	-0.00377	0.016656	38%	-0.00522
-51	-0.00307	-0.00361	0.023846	25%	-0.00829
-50	0.006064	0.003732	-0.00783	63%	-0.00223
-49	0.003786	0.010305	0.041607	50%	0.001561
-48	-0.00369	0.007052	-0.01431	50%	-0.00213
-47	0.00149	0.00471	-0.00996	56%	-0.00064
-46	-0.00988	-0.01564	0.004703	25%	-0.01053
-45	-0.00059	-0.00529	-0.00044	44%	-0.01112
-44	-0.00016	0.001399	-0.00883	50%	-0.01128
-43	-0.00278	0.003821	-0.01745	31%	-0.01406
-42	0.001624	0.010957	-0.00493	44%	-0.01244
-41	-0.00037	0.001101	-0.02174	44%	-0.0128
-40	-0.00085	0.002936	-0.0016	50%	-0.01365
-39	-0.00547	-0.0075	-0.00347	38%	-0.01912
-38	-0.00415	-0.00237	0.007968	38%	-0.02327
-37	-0.0012	0.004229	-0.00896	38%	-0.02447
-36	0.001597	0.002918	0.003292	44%	-0.02287

-35	-0.00041	-0.00248	0.018409	50%	-0.02329
-34	0.000722	0.000345	-0.00306	50%	-0.02256
-33	-0.00041	0.001793	-0.00823	44%	-0.02298
-32	-0.00134	-0.00304	-0.00128	56%	-0.02432
-31	0.001746	0.001643	-0.00508	44%	-0.02257
-30	-0.00092	0.001157	0.009762	50%	-0.02349
-29	-0.00301	0.001321	0.004987	44%	-0.02651
-28	-0.01927	-0.03012	0.004159	38%	-0.04577
-27	-0.00189	-0.00604	-0.0077	25%	-0.04767
-26	-0.00157	-0.00932	0.005194	38%	-0.04924
-25	0.001558	0.00399	0.008966	38%	-0.04768
-24	-0.00596	-0.00745	-0.02249	44%	-0.05363
-23	0.006993	0.001416	0.002231	69%	-0.04664
-22	-0.00546	-0.00367	0.008879	31%	-0.0521
-21	0.010348	0.022902	-0.00553	44%	-0.04176
-20	-0.00432	-0.0066	0.004585	31%	-0.04607
-19	0.003216	0.007833	-0.01418	56%	-0.04286
-18	0.01196	0.02465	-0.00374	50%	-0.0309
-17	-0.00492	-0.00233	0.025667	25%	-0.03582
-16	2.85E-05	-0.00074	0.039545	44%	-0.03579
-15	0.003725	0.005514	-0.02432	50%	-0.03207
-14	0.004534	0.010744	-0.0329	31%	-0.02753
-13	0.000589	0.002392	-0.00395	69%	-0.02694
-12	0.004666	0.007208	-0.01867	56%	-0.02228
-11	-0.00411	-0.00725	-0.00624	25%	-0.02639
-10	0.001098	0.000945	0.017415	50%	-0.02529
-9	-0.00343	-0.00156	-0.00376	38%	-0.02872
-8	-0.00596	-0.00641	0.003075	25%	-0.03468
-7	0.002237	0.006424	-0.01413	50%	-0.03244
-6	-0.00259	-0.0012	-0.00486	44%	-0.03503
-5	-0.00431	-0.00695	-0.00261	38%	-0.03934
-4	0.003335	-0.00085	-4.9E-05	44%	-0.03601
-3	-0.00478	-0.00026	-0.00193	31%	-0.04079
-2	0.002345	0.004979	-0.00596	50%	-0.03844
-1	-0.00301	-0.00943	-0.00381	44%	-0.04146
0	0.000286	-0.00584	-0.01237	56%	-0.04117
1	-0.00559	0.000914	-0.0025	31%	-0.04676
2	-0.00215	-0.00326	-0.00567	38%	-0.04891
3	-0.00328	-0.00579	-0.0015	31%	-0.05219
4	-0.00178	-0.00058	-0.00424	38%	-0.05398
5	-0.00515	-0.00959	-0.00796	31%	-0.05913
6	-0.00594	-0.00187	0.000105	44%	-0.06507
7	0.001151	6.82E-05	-0.00026	69%	-0.06392

8	-0.00355	-0.00403	-0.0037	25%	-0.06746
9	0.003638	0.008092	0.003981	63%	-0.06383
10	-0.00083	0.003437	-0.00408	50%	-0.06465
Average from day -60 to -6	-0.000636543	0.000569236	-0.000833909	-	-0.022348964
Average from day -60 to -5	-0.000702141	0.000434964	-0.000865625	-	-0.022652375
Average from day -60 to -1	-0.000690498	0.000313283	-0.001003733	-	-0.023753883
Average from day -60 to +1	-0.000753772	0.000223726	-0.001211194	-	-0.024405855
Average from day -60 to +10	-0.000910209	4.90423E-6	-0.001386169	-	-0.028905676

Table 5.22: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2008(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.005781	0.008557	0.002312	78%	0.005781
-59	0.00281	0.000445	0.005766	56%	0.008592
-58	0.005656	0.013112	-0.00366	56%	0.014248
-57	-0.00464	-0.00634	-0.00252	50%	0.009604
-56	-0.00702	-0.00621	-0.00803	33%	0.002587
-55	-0.00088	0.000743	-0.0029	39%	0.001712
-54	-0.00252	-0.00236	-0.00271	44%	-0.0008
-53	-0.00511	-0.01337	5.22E-03	61%	-0.00591
-52	-0.00255	-0.00165	-0.00367	61%	-0.00846
-51	0.00732	0.01144	0.002169	67%	-0.00114
-50	0.004381	0.005285	0.003251	50%	0.003239
-49	0.005532	0.006812	0.003933	44%	0.008771
-48	-0.00799	-0.01409	-0.00037	50%	0.00078
-47	0.003848	0.005444	1.85E-03	61%	0.004628
-46	-0.00375	-0.00469	-0.00257	50%	0.000879
-45	0.004933	0.007546	0.001667	56%	0.005812
-44	-0.00362	-0.00864	0.002671	67%	0.002197
-43	-0.00796	-0.01527	0.001166	39%	-0.00577
-42	0.009578	0.012567	0.005841	56%	0.003811

-41	0.007741	0.013417	0.000646	72%	0.011552
-40	0.002005	0.009	-0.00674	67%	0.013557
-39	-0.00095	-0.00829	0.008223	61%	0.012604
-38	0.006652	0.009511	0.003079	44%	0.019256
-37	-0.00466	-0.00633	-0.00257	61%	0.014598
-36	0.004592	0.010905	-0.0033	61%	0.019189
-35	-0.00774	-0.01476	0.001034	61%	0.011451
-34	-0.00919	-0.01409	-0.00308	50%	0.002256
-33	0.010907	0.022072	-0.00305	56%	0.013164
-32	-0.00586	-0.01049	-6.1E-05	39%	0.007307
-31	0.002239	0.002943	0.001358	67%	0.009546
-30	0.003131	6.19E-05	0.006967	44%	0.012677
-29	0.004565	0.009268	-0.00131	56%	0.017242
-28	0.015925	0.027435	0.001539	72%	0.033167
-27	0.000407	-0.00053	0.001581	61%	0.033574
-26	0.010709	0.020285	-0.00126	44%	0.044283
-25	-0.00971	-0.01733	-0.0002	56%	0.03457
-24	-0.00327	-0.00545	-0.00055	56%	0.031297
-23	-0.01011	-0.01998	0.002227	50%	0.021186
-22	0.000262	-0.00069	0.001448	50%	0.021448
-21	-0.00095	-0.00341	0.002115	39%	0.020496
-20	-0.01194	-0.02409	0.003235	50%	0.008553
-19	-0.00384	-0.01014	0.004038	39%	0.004713
-18	0.002092	0.000427	0.004174	61%	0.006805
-17	0.005773	0.004763	0.007036	61%	0.012578
-16	-0.00048	0.002068	-0.00367	33%	0.012097
-15	-0.01038	-0.01222	-0.00807	44%	0.001718
-14	0.013562	0.016747	0.009581	72%	0.01528
-13	-0.0103	-0.00857	-0.01246	44%	0.004984
-12	-0.00911	-0.0111	-0.00662	28%	-0.00412
-11	-0.00115	0.0008	-0.00359	56%	-0.00528
-10	-0.01127	-0.00855	-0.01466	39%	-0.01654
-9	-0.00795	-0.01324	-0.00133	56%	-0.02449
-8	0.006562	0.003278	0.010668	78%	-0.01793
-7	0.004423	0.00589	0.002589	56%	-0.0135
-6	0.007253	0.007061	0.007493	61%	-0.00625
-5	0.004185	0.012604	-0.00634	50%	-0.00207
-4	0.006584	0.007731	0.005151	50%	0.004518
-3	0.001539	-0.00128	0.005063	56%	0.006057
-2	-0.00619	-0.00563	-0.0069	39%	-0.00014
-1	0.001794	0.00097	0.002825	44%	0.001658
0	-0.0081	-0.0099	-0.00585	39%	-0.00644
1	0.006852	0.002848	0.011858	50%	0.000408
2	-0.01777	-0.02337	-0.01077	33%	-0.01736
3	0.000816	0.003188	-0.00215	56%	-0.01655
4	-0.00537	-0.00532	-0.00544	61%	-0.02192
5	-0.00259	-0.00292	-0.00218	44%	-0.02451
6	0.000844	0.002961	-0.0018	56%	-0.02366
7	-0.00821	-0.01786	0.003866	61%	-0.03187
8	-0.0038	-0.0025	-0.00543	28%	-0.03567

9	0.006444	0.007287	0.00539	61%	-0.02923
10	-0.00991	-0.02347	0.007038	44%	-0.03914
Average from day -60 to -6	-0.000113836	-0.000436311	0.000289564	-	0.007883618
Average from day -60 to -5	-3.70714E-05	-0.000203448	0.000171179	-	0.007705875
Average from day -60 to -1	2.75167E-05	-0.000160035	0.000262083	-	0.0073937
Average from day -60 to +1	6.5E-06	-0.000268615	0.000350532	-	0.007057903
Average from day -60 to +10	-0.00055131	-0.001107861	0.000144465	-	0.002784225

Table 5.23: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2009(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.016903	0.015097	0.01703	63%	0.016903
-59	-0.01525	-0.02984	-0.00365	38%	0.001654
-58	0.013959	0.034073	-0.00143	50%	0.015613
-57	0.03154	0.065131	0.005793	63%	0.047153
-56	0.018514	0.057188	-0.01204	56%	0.065667
-55	0.007438	0.008983	0.006525	56%	0.073106
-54	0.008781	0.019267	0.001966	63%	0.081886
-53	-0.0012	-0.00672	0.004013	44%	0.08069
-52	0.011185	0.016283	0.008995	50%	0.091875
-51	0.001169	-0.00363	0.004088	56%	0.093043
-50	-0.00549	-0.00357	-0.00541	31%	0.08755
-49	0.00852	0.013596	0.003213	44%	0.09607
-48	0.01703	-0.00329	0.036836	69%	0.1131
-47	-0.00327	-0.00547	-0.00106	31%	0.109825
-46	0.00787	0.023105	-0.008	69%	0.117696
-45	-0.00356	0.000971	-0.0096	50%	0.114134
-44	-0.00599	-0.01151	-0.00284	44%	0.108141
-43	0.012513	0.019118	0.006302	69%	0.120654

-42	-0.00637	0.005648	-0.01699	31%	0.114284
-41	0.011268	0.020055	0.00569	56%	0.125551
-40	-0.00477	0.002211	-0.01237	25%	0.120785
-39	0.014138	0.023119	0.007722	63%	0.134923
-38	-0.00345	-0.01764	0.009945	31%	0.131478
-37	-0.01779	-0.04037	0.000475	38%	0.113691
-36	0.004334	-0.00033	0.009121	44%	0.118025
-35	0.000797	0.015602	-0.01141	56%	0.118822
-34	0.00447	0.01104	0.000196	44%	0.123293
-33	-0.00518	-0.00942	-0.00209	38%	0.118115
-32	0.009698	0.022957	0.000319	56%	0.127813
-31	0.007607	0.011371	0.004297	56%	0.13542
-30	-0.00403	-0.00925	-0.00284	44%	0.131394
-29	-0.00474	-0.00622	-0.00145	63%	0.126658
-28	-0.00461	-0.00387	-0.00713	38%	0.122049
-27	0.022741	0.03241	0.015589	75%	0.14479
-26	-0.00887	-0.01665	0.002519	44%	0.135919
-25	0.005176	0.010552	0.001661	63%	0.141095
-24	0.012256	0.02956	0.000137	44%	0.153351
-23	-0.00621	0.004811	-0.01624	38%	0.147143
-22	0.008232	0.014467	0.003262	56%	0.155375
-21	0.037511	0.085714	-0.00444	38%	0.192886
-20	0.008759	0.023875	-0.00303	38%	0.201645
-19	-0.00499	-0.02256	0.010293	50%	0.196651
-18	0.002492	0.004974	0.000683	25%	0.199143
-17	0.008128	0.013481	0.003367	63%	0.207271
-16	-0.00452	-0.0065	-0.00289	31%	0.202755
-15	0.000202	-0.00457	0.005654	50%	0.202957
-14	-0.00043	0.003465	-0.00286	38%	0.202528
-13	-0.00927	0.001963	-0.02164	38%	0.193263
-12	0.018639	0.033393	0.005395	69%	0.211902
-11	-0.01167	-0.0107	-0.01289	31%	0.200228
-10	0.001249	0.004014	-0.00155	38%	0.201478
-9	-0.00279	0.003538	-0.008	38%	0.198685
-8	0.008625	0.020222	0.000543	44%	0.207309
-7	0.01666	0.026158	0.011101	63%	0.223969
-6	0.027125	0.030049	0.026081	75%	0.251094
-5	-0.0032	0.000146	-0.00505	25%	0.247891
-4	0.036335	0.074095	0.006493	63%	0.284226
-3	0.001536	0.006492	-0.00216	31%	0.285762
-2	0.005025	0.009626	0.001302	63%	0.290787
-1	-0.00494	-0.01339	0.003156	38%	0.285849
0	0.018285	0.025445	0.010353	50%	0.304134

1	0.007497	-0.01185	0.021912	75%	0.311631
2	0.00182	-0.00205	0.004017	56%	0.31345
3	-0.01528	-0.03481	0.000726	25%	0.298174
4	0.008349	0.0179	0.000515	56%	0.306523
5	0.001304	0.002061	-0.00046	50%	0.307826
6	-0.00545	-0.0124	0.001347	50%	0.302376
7	-0.00031	-0.00113	0.000959	50%	0.302065
8	0.00414	0.009614	0.000269	50%	0.306205
9	-0.00455	0.00992	-0.01641	31%	0.301656
10	0.010305	0.036665	-0.01135	56%	0.311961
Average from day -60 to -6	0.004565073	0.008896972	0.000881408	-	0.135790873
Average from day -60 to -5	0.004426411	0.009205304	0.000748411	-	0.137792661
Average from day -60 to -1	0.004763917	0.009872	0.000845033	-	0.147716883
Average from day -60 to +1	0.005026081	0.009772823	0.001338177	-	0.152883516
Average from day -60 to +10	0.004393592	0.008896972	0.000881408	-	0.172239634

Table 5.24: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2010(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.002837	0.023917	0.007219	50%	0.002837
-59	0.014324	0.024061	-0.00135	67%	0.017161
-58	-0.00107	0.008276	-0.00332	44%	0.016096
-57	0.00535	0.016294	-0.00034	61%	0.021446
-56	-0.0094	-0.01719	-0.01117	28%	0.012044
-55	-0.00265	-0.00405	0.001601	33%	0.009396
-54	0.003063	-0.00246	0.005887	44%	0.012459
-53	0.009056	0.005664	0.013024	44%	0.021515
-52	-0.01579	-0.0062	-0.02219	28%	0.005729

-51	0.001395	0.001159	0.000349	39%	0.007124
-50	0.011325	0.011031	0.012305	33%	0.018449
-49	-0.00308	-0.00428	-0.00591	39%	0.015365
-48	-0.00748	0.006725	-0.00939	50%	0.00788
-47	0.000851	-0.00256	0.004518	39%	0.008731
-46	0.007319	-0.00147	0.009963	28%	0.01605
-45	-0.00474	-0.00227	-0.0101	39%	0.011312
-44	-0.00363	-0.00344	-0.00413	39%	0.007683
-43	-0.00475	-0.002	0.00389	22%	0.002936
-42	-0.00029	0.004203	-0.01057	44%	0.002649
-41	-0.00261	0.00891	-0.0065	44%	4.31E-05
-40	0.010399	0.004752	0.013634	39%	0.010442
-39	-0.00044	-0.00905	0.002855	44%	0.010004
-38	-0.00219	0.000648	-0.00252	39%	0.007813
-37	-0.00168	-0.00698	-0.00033	33%	0.006137
-36	-0.0009	0.002963	-0.00197	50%	0.005237
-35	-0.00291	0.002837	-0.00354	50%	0.00233
-34	0.0082	0.016039	0.003739	56%	0.01053
-33	0.003117	-0.00124	0.000168	39%	0.013647
-32	-0.00611	-8.7E-05	-0.00746	22%	0.007542
-31	-0.00819	0.001285	-0.01061	33%	-0.00065
-30	-0.00468	-0.00485	-0.00489	56%	-0.00533
-29	-0.00832	0.001567	-0.01447	28%	-0.01365
-28	-0.00331	0.001542	-0.00707	39%	-0.01696
-27	0.000746	0.002603	-0.00254	33%	-0.01621
-26	-0.00377	0.000432	-0.00221	39%	-0.01999
-25	0.007948	0.007305	0.009546	67%	-0.01204
-24	0.002388	0.004138	-0.00044	61%	-0.00965
-23	-0.00449	-0.00706	-0.00139	22%	-0.01414
-22	-0.00833	-0.00189	-0.01278	17%	-0.02247
-21	-0.00055	0.003701	0.000435	44%	-0.02302
-20	0.001229	0.002224	-0.00148	50%	-0.02179
-19	0.00626	0.01279	0.003349	67%	-0.01553
-18	-0.00225	0.017347	-0.01609	61%	-0.01778
-17	-0.00952	0.000174	-0.0098	33%	-0.0273
-16	-0.00464	0.001026	-0.00608	33%	-0.03194
-15	-0.00197	-0.00733	-0.00183	28%	-0.03391
-14	0.001792	0.005902	0.004283	33%	-0.03212
-13	7.01E-05	-0.00644	-0.00241	28%	-0.03205
-12	-0.00082	-0.00342	0.000826	33%	-0.03287
-11	-0.00828	-0.00546	-0.00929	33%	-0.04114
-10	-0.00579	-0.00873	-0.00258	28%	-0.04694
-9	-0.00829	-0.0063	-0.00316	11%	-0.05522

-8	0.002983	-0.00383	-0.0007	33%	-0.05224
-7	-0.00285	0.003239	-0.00748	39%	-0.05509
-6	0.004931	0.007957	0.006046	33%	-0.05016
-5	0.017036	0.009374	0.019492	50%	-0.03312
-4	-0.00554	-0.00238	-0.00698	22%	-0.03867
-3	0.010236	-0.00397	0.012514	33%	-0.02843
-2	-0.00889	-0.00674	-0.00332	22%	-0.03732
-1	0.001943	0.007196	-0.01339	56%	-0.03537
0	-0.01416	0.012622	-0.01589	33%	-0.04954
1	-0.01139	-0.02774	-0.00748	39%	-0.06093
2	-0.01039	-0.00843	-0.00769	11%	-0.07132
3	0.002712	-0.00085	0.004389	50%	-0.06861
4	-0.0073	-0.01108	-0.00558	17%	-0.07591
5	0.003599	0.002449	0.005721	44%	-0.07231
6	-0.0006	0.001043	-0.00472	33%	-0.07291
7	-0.0036	0.005202	-0.00619	56%	-0.07651
8	-0.00991	-0.00251	-0.01484	17%	-0.08642
9	-0.006	-0.00445	-0.00659	28%	-0.09242
10	-0.00219	0.004492	-0.004	39%	-0.09461
Average from day -60 to -6	-0.000912489	0.001674982	-0.002080964	-	-0.007447325
Average from day -60 to -5	-0.00059198	0.001812464	-0.001695732	-	-0.007905766
Average from day -60 to -1	-0.000590032	0.0015934	-0.00176895	-	-0.009708548
Average from day -60 to +1	-0.000983095	0.001298161	-0.002088823	-	-0.011177144
Average from day -60 to +10	-0.00133283	0.000934535	-0.00238038	-	-0.019774689

Table 5.25: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2006(from the market model with significantR_{mt-1})

Day	Daily average of the total target	Daily average of the suspected	Daily average of the clean target	Percent of daily residuals positive of the	Cumulative average abnormal returns (CAAR)	Cumulative average abnormal returns (CAAR)	Cumulative average abnormal returns (CAAR) of

	firms	target firms	firms	total target firms	of the total target firms	of the suspected target firms	the clean target firms
-60	0.007	0.0196	8E-05	47%	0.007	0.0196	8E-05
-59	0.006	0.0200	-2E-03	58%	0.014	0.0395	-2E-03
-58	0.000	0.0015	-1E-03	53%	0.013	0.0410	-3E-03
-57	0.002	-0.0008	3E-03	53%	0.015	0.0402	5E-05
-56	-0.005	0.0029	-9E-03	53%	0.010	0.0431	-9E-03
-55	0.003	0.0016	4E-03	37%	0.013	0.0447	-5E-03
-54	-0.002	0.0012	-4E-03	37%	0.011	0.0459	-9E-03
-53	0.000	0.0049	-3E-03	53%	0.011	0.0507	-1E-02
-52	0.004	0.0049	4E-03	58%	0.015	0.0556	-8E-03
-51	0.000	0.0002	6E-04	37%	0.016	0.0558	-7E-03
-50	0.003	0.0006	5E-03	47%	0.019	0.0564	-3E-03
-49	-0.006	0.0010	-1E-02	37%	0.013	0.0573	-1E-02
-48	0.003	0.0009	5E-03	42%	0.016	0.0583	-8E-03
-47	-0.002	-0.0087	2E-03	53%	0.015	0.0495	-6E-03
-46	0.000	-0.0003	6E-04	42%	0.015	0.0492	-5E-03
-45	-0.003	-0.0063	-5E-04	26%	0.012	0.0429	-6E-03
-44	0.001	0.0005	1E-03	47%	0.013	0.0434	-4E-03
-43	-0.003	0.0004	-5E-03	37%	0.010	0.0437	-1E-02
-42	0.001	0.0051	-6E-04	53%	0.011	0.0489	-1E-02
-41	-0.010	-0.0009	-1E-02	42%	0.002	0.0480	-3E-02
-40	0.000	0.0093	-5E-03	32%	0.002	0.0573	-3E-02
-39	0.001	-0.0007	2E-03	63%	0.003	0.0567	-3E-02
-38	0.003	-0.0021	5E-03	58%	0.005	0.0546	-2E-02
-37	-0.015	-0.0076	-2E-02	32%	-0.010	0.0470	-4E-02
-36	-0.007	-0.0071	-6E-03	32%	-0.016	0.0399	-5E-02
-35	-0.001	0.0007	-2E-03	42%	-0.017	0.0406	-5E-02
-34	0.003	0.0032	2E-03	53%	-0.015	0.0438	-5E-02
-33	0.001	0.0041	-1E-04	53%	-0.013	0.0479	-5E-02
-32	0.001	0.0037	-5E-04	42%	-0.012	0.0517	-5E-02
-31	0.006	0.0271	-6E-03	53%	-0.006	0.0788	-6E-02
-30	0.007	0.0028	1E-02	47%	0.001	0.0816	-5E-02
-29	0.003	0.0078	4E-04	42%	0.005	0.0894	-4E-02
-28	-0.002	-0.0055	3E-04	26%	0.003	0.0839	-4E-02
-27	0.001	0.0133	-6E-03	58%	0.004	0.0972	-5E-02
-26	-0.005	-0.0166	2E-03	53%	-0.001	0.0806	-5E-02
-25	0.002	-0.0038	5E-03	37%	0.001	0.0768	-4E-02
-24	0.004	0.0111	-5E-04	53%	0.005	0.0879	-4E-02
-23	0.003	0.0194	-7E-03	58%	0.008	0.1073	-5E-02
-22	0.009	0.0271	-1E-03	53%	0.017	0.1344	-5E-02
-21	0.018	0.0468	8E-04	58%	0.034	0.1812	-5E-02
-20	-0.005	-0.0101	-2E-03	42%	0.029	0.1710	-5E-02
-19	-0.008	-0.0062	-9E-03	26%	0.022	0.1648	-6E-02
-18	-0.003	-0.0070	1E-04	32%	0.019	0.1578	-6E-02
-17	-0.001	0.0046	-5E-03	42%	0.018	0.1624	-7E-02
-16	-0.001	0.0011	-2E-03	53%	0.017	0.1635	-7E-02
-15	0.004	-0.0002	6E-03	53%	0.021	0.1633	-6E-02

-14	0.004	-0.0019	7E-03	47%	0.024	0.1614	-6E-02
-13	-0.002	-0.0052	3E-05	37%	0.023	0.1562	-6E-02
-12	-0.001	-0.0053	8E-04	47%	0.021	0.1509	-5E-02
-11	-0.004	-0.0031	-4E-03	16%	0.018	0.1478	-6E-02
-10	0.004	0.0077	2E-03	42%	0.022	0.1555	-6E-02
-9	0.007	0.0123	3E-03	68%	0.028	0.1678	-5E-02
-8	0.011	0.0253	2E-03	53%	0.039	0.1931	-5E-02
-7	-0.012	-0.0238	-6E-03	37%	0.027	0.1693	-6E-02
-6	0.002	0.0065	-1E-03	47%	0.028	0.1758	-6E-02
-5	-0.002	-0.0047	-8E-04	37%	0.026	0.1711	-6E-02
-4	0.003	0.0067	4E-04	47%	0.029	0.1778	-6E-02
-3	0.004	0.0009	5E-03	68%	0.033	0.1787	-5E-02
-2	0.006	0.0076	6E-03	58%	0.039	0.1863	-5E-02
-1	0.010	0.0317	-3E-03	42%	0.049	0.2179	-5E-02
0	0.093	0.0196	1E-01	68%	0.142	0.2376	9E-02
1	0.004	-0.0008	7E-03	53%	0.147	0.2368	9E-02
2	0.000	-0.0034	1E-03	42%	0.146	0.2334	1E-01
3	0.001	0.0021	7E-04	47%	0.148	0.2355	1E-01
4	0.009	0.0001	1E-02	47%	0.157	0.2356	1E-01
5	0.003	0.0098	-4E-04	68%	0.160	0.2454	1E-01
6	0.007	0.0050	8E-03	58%	0.167	0.2504	1E-01
7	0.003	0.0018	4E-03	53%	0.170	0.2523	1E-01
8	0.004	0.0003	6E-03	53%	0.174	0.2526	1E-01
9	-0.002	0.0000	-3E-03	32%	0.172	0.2526	1E-01
10	0.004	-0.0017	7E-03	42%	0.176	0.2509	1E-01
Average from day -60 to -6	0.000472727	0.0032	-0.000990727	-	0.011	0.089689091	-0.034815818
Average from day -60 to -5	0.000428571	0.003058929	-0.000987321	-	0.011267857	0.091142857	-0.035265536
Average from day -60 to -1	0.000783333	0.003636667	-0.000781 5	-	0.013016667	0.097745	-0.0364145
Average from day -60 to +1	0.002322581	0.003822581	0.003822581	-	0.017258065	0.102243548	-0.032336613
Average from day -60 to +10	0.002436 62	0.003535211	0.001315634	-	0.035774648	0.120391549	-0.015561549

Table 5.26: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2007(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	0.010	0.011	0.004	75%	0.010	0.011	0.004
-59	0.007	0.008	0.000	69%	0.017	0.020	0.004
-58	-0.001	0.003	-0.019	44%	0.016	0.023	-0.015
-57	0.036	0.040	0.020	44%	0.052	0.063	0.005
-56	0.014	0.014	0.011	56%	0.066	0.077	0.016
-55	0.025	0.027	0.016	75%	0.091	0.105	0.032
-54	0.004	0.003	0.004	50%	0.095	0.108	0.036
-53	0.004	0.001	0.019	56%	0.099	0.109	0.055
-52	-0.003	-0.003	-0.005	38%	0.095	0.106	0.049
-51	-0.005	-0.009	0.015	31%	0.091	0.097	0.065
-50	0.001	-0.001	0.008	56%	0.092	0.096	0.072
-49	0.007	0.006	0.012	44%	0.099	0.102	0.084
-48	-0.003	-0.006	0.008	69%	0.095	0.096	0.092
-47	0.002	0.004	-0.007	44%	0.097	0.099	0.086
-46	-0.001	0.001	-0.010	31%	0.096	0.101	0.076
-45	0.012	0.015	0.002	56%	0.108	0.115	0.077
-44	0.000	0.001	-0.005	44%	0.108	0.116	0.072
-43	-0.003	-0.002	-0.011	56%	0.104	0.114	0.061
-42	0.005	0.002	0.014	63%	0.109	0.116	0.076
-41	0.000	0.001	-0.003	50%	0.109	0.117	0.072
-40	-0.006	-0.004	-0.017	38%	0.102	0.113	0.055
-39	0.001	0.001	0.003	44%	0.104	0.114	0.058
-38	0.001	0.001	0.002	25%	0.105	0.115	0.060
-37	0.006	0.007	0.006	69%	0.111	0.122	0.066
-36	-0.004	-0.004	-0.001	31%	0.108	0.117	0.065
-35	-0.005	-0.008	0.009	56%	0.103	0.110	0.074
-34	0.013	0.014	0.009	63%	0.116	0.124	0.083
-33	0.009	0.012	-0.007	63%	0.125	0.136	0.076
-32	0.004	0.008	-0.013	44%	0.129	0.144	0.063
-31	-0.010	-0.014	0.005	63%	0.119	0.130	0.068
-30	0.001	0.001	0.001	63%	0.120	0.131	0.069
-29	-0.004	-0.007	0.010	44%	0.116	0.124	0.079
-28	-0.003	-0.005	0.004	44%	0.113	0.119	0.083
-27	0.004	0.004	0.000	50%	0.116	0.124	0.083
-26	-0.002	0.001	-0.014	38%	0.115	0.125	0.069

-25	0.000	-0.002	0.011	50%	0.115	0.123	0.080
-24	0.003	0.000	0.016	56%	0.118	0.123	0.096
-23	0.011	0.007	0.028	56%	0.129	0.130	0.124
-22	0.003	0.007	-0.014	38%	0.131	0.137	0.109
-21	-0.003	-0.001	-0.009	50%	0.129	0.135	0.100
-20	-0.009	-0.008	-0.012	31%	0.120	0.127	0.088
-19	-0.002	-0.003	0.005	44%	0.118	0.124	0.092
-18	0.012	0.013	0.007	81%	0.130	0.137	0.099
-17	-0.003	-0.005	0.001	31%	0.126	0.132	0.100
-16	-0.002	-0.003	0.001	44%	0.124	0.130	0.101
-15	-0.005	-0.009	0.011	44%	0.119	0.121	0.112
-14	0.000	0.002	-0.011	44%	0.119	0.123	0.101
-13	0.007	0.010	-0.004	25%	0.126	0.133	0.097
-12	0.001	0.001	0.001	56%	0.127	0.134	0.097
-11	0.002	0.001	0.009	50%	0.130	0.135	0.107
-10	0.003	0.004	0.001	56%	0.133	0.138	0.108
-9	0.000	-0.001	0.003	50%	0.133	0.137	0.111
-8	0.006	0.006	0.004	44%	0.138	0.144	0.116
-7	0.001	0.000	0.003	44%	0.139	0.144	0.119
-6	0.006	0.009	-0.005	50%	0.145	0.152	0.114
-5	-0.010	-0.014	0.011	38%	0.136	0.138	0.125
-4	0.007	0.008	0.004	50%	0.143	0.146	0.129
-3	0.020	0.022	0.012	69%	0.163	0.168	0.141
-2	0.002	0.004	-0.009	31%	0.164	0.172	0.132
-1	0.089	0.103	0.026	75%	0.253	0.275	0.158
0	0.111	0.109	0.120	75%	0.365	0.384	0.278
1	0.000	-0.002	0.005	44%	0.364	0.383	0.283
2	0.015	0.019	-0.003	63%	0.379	0.402	0.280
3	0.004	0.002	0.015	75%	0.383	0.403	0.295
4	-0.003	-0.004	0.004	25%	0.380	0.399	0.299
5	-0.005	-0.004	-0.007	31%	0.376	0.395	0.292
6	-0.002	-0.002	-0.006	31%	0.373	0.393	0.286
7	0.002	0.002	-0.002	50%	0.375	0.396	0.283
8	-0.001	0.000	-0.004	44%	0.374	0.395	0.280
9	0.000	0.000	0.002	63%	0.374	0.395	0.281
10	-0.004	-0.005	0.000	31%	0.370	0.390	0.281
Average from day -60 to -6	0.002672727	0.002745455	0.002109091	-	0.107272727	0.114509091	0.075290909
Average from day -60 to -5	0.002446429	0.002446429	0.002267857	-	0.107785714	0.114928571	0.076178571
Average from day -	0.002309091	0.004566667	0.002666667	-	0.11265	0.11995	0.080433333

60 to -1							
Average from day -60 to +1	0.005903226	0.006145161	0.004596774	-	0.120774194	0.128451613	0.086887097
Average from day -60 to +10	0.005239437	0.005478873	0.004	-	0.153126761	0.162422535	0.112169014

Table 5.27: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2008(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	-0.004	0.002	-0.010	61%	-0.004	0.002	-0.010
-59	-0.013	-0.011	-0.016	39%	-0.017	-0.009	-0.026
-58	-0.001	-0.003	0.001	61%	-0.018	-0.012	-0.025
-57	-0.007	-0.004	-0.009	61%	-0.025	-0.016	-0.034
-56	-0.002	0.014	-0.017	56%	-0.026	-0.002	-0.051
-55	0.016	0.010	0.022	72%	-0.011	0.008	-0.029
-54	0.006	0.008	0.005	89%	-0.004	0.016	-0.024
-53	-0.019	-0.016	-0.021	39%	-0.023	0.000	-0.046
-52	-0.001	0.000	-0.002	56%	-0.024	0.000	-0.048
-51	0.017	0.030	0.005	89%	-0.007	0.030	-0.043
-50	0.006	0.022	-0.011	67%	-0.001	0.052	-0.055
-49	0.001	0.003	-0.001	67%	0.000	0.055	-0.055
-48	0.005	0.026	-0.017	61%	0.004	0.080	-0.072
-47	0.002	0.006	-0.002	61%	0.006	0.087	-0.074
-46	-0.004	-0.013	0.005	78%	0.003	0.074	-0.069
-45	-0.005	-0.001	-0.008	50%	-0.002	0.073	-0.077
-44	-0.001	-0.002	0.001	78%	-0.003	0.071	-0.076
-43	0.001	0.000	0.003	78%	-0.002	0.070	-0.073
-42	-0.031	-0.066	0.004	67%	-0.033	0.004	-0.069
-41	-0.005	-0.019	0.009	56%	-0.038	-0.015	-0.060
-40	-0.013	-0.028	0.001	56%	-0.051	-0.043	-0.059
-39	-0.002	-0.005	0.001	72%	-0.053	-0.047	-0.058

-38	-0.011	-0.031	0.009	61%	-0.063	-0.078	-0.049
-37	-0.010	-0.026	0.006	67%	-0.073	-0.104	-0.043
-36	-0.006	-0.018	0.006	72%	-0.079	-0.122	-0.036
-35	-0.024	-0.034	-0.013	44%	-0.103	-0.157	-0.049
-34	-0.013	-0.030	0.005	78%	-0.116	-0.187	-0.045
-33	0.039	0.080	-0.002	61%	-0.077	-0.107	-0.047
-32	0.033	0.065	0.001	89%	-0.044	-0.042	-0.046
-31	-0.015	-0.036	0.007	78%	-0.059	-0.078	-0.039
-30	0.012	0.024	0.000	67%	-0.046	-0.054	-0.039
-29	0.024	0.038	0.009	72%	-0.023	-0.016	-0.030
-28	-0.001	0.001	-0.004	67%	-0.024	-0.015	-0.034
-27	0.011	0.012	0.010	50%	-0.013	-0.002	-0.024
-26	0.024	0.010	0.038	72%	0.011	0.007	0.015
-25	0.021	-0.013	0.055	61%	0.032	-0.006	0.070
-24	0.004	0.006	0.001	72%	0.036	0.000	0.071
-23	0.015	0.022	0.008	78%	0.050	0.021	0.079
-22	0.020	0.015	0.024	72%	0.070	0.036	0.103
-21	0.017	-0.017	0.051	67%	0.087	0.019	0.154
-20	-0.004	-0.002	-0.006	50%	0.083	0.017	0.148
-19	-0.004	-0.017	0.008	56%	0.078	0.001	0.156
-18	0.014	0.029	-0.001	78%	0.092	0.029	0.155
-17	-0.023	-0.015	-0.030	50%	0.069	0.014	0.125
-16	0.001	-0.011	0.013	50%	0.070	0.002	0.138
-15	0.019	0.020	0.019	56%	0.090	0.023	0.157
-14	0.004	0.000	0.007	72%	0.093	0.022	0.164
-13	0.010	0.010	0.011	67%	0.103	0.032	0.175
-12	0.008	0.020	-0.004	78%	0.111	0.052	0.171
-11	0.003	0.010	-0.005	67%	0.114	0.062	0.166
-10	0.000	-0.003	0.004	61%	0.114	0.059	0.170
-9	0.005	0.017	-0.007	61%	0.119	0.075	0.163
-8	0.006	0.004	0.007	67%	0.125	0.079	0.171
-7	0.000	-0.008	0.008	50%	0.125	0.071	0.179
-6	0.003	0.009	-0.002	67%	0.128	0.080	0.177
-5	0.003	0.006	0.000	72%	0.131	0.086	0.177
-4	0.005	0.014	-0.003	61%	0.137	0.100	0.174
-3	0.008	0.004	0.012	61%	0.145	0.103	0.186
-2	0.012	-0.004	0.027	67%	0.156	0.099	0.213
-1	0.041	0.080	0.001	67%	0.197	0.179	0.215
0	0.139	0.203	0.076	67%	0.336	0.382	0.290
1	0.022	0.007	0.038	61%	0.359	0.389	0.328
2	-0.003	0.004	-0.010	72%	0.355	0.392	0.318
3	-0.006	0.007	-0.019	67%	0.349	0.400	0.299
4	-0.031	-0.020	-0.042	50%	0.319	0.380	0.258
5	0.000	-0.036	0.036	61%	0.319	0.344	0.293
6	-0.003	-0.011	0.004	72%	0.315	0.334	0.297
7	-0.011	-0.010	-0.012	50%	0.304	0.323	0.285
8	-0.006	-0.006	-0.006	61%	0.298	0.317	0.279
9	-0.009	-0.015	-0.002	72%	0.289	0.302	0.276
10	0.000	-0.004	0.004	56%	0.290	0.299	0.281
Aver	0.002327	0.00152	0.00394	-	0.07112676	0.0038363	0.023509091

age from day -60 to -6	273	7273	3662		1	64	
Average from day -60 to -5	0.00233928 6	0.00160 7143	0.00314 2857	-	0.01575	0.0053035 71	0.02625
Average from day -60 to -1	0.00328333 3	0.00306 6667	0.00355	-	0.02528333 3	0.0129666 67	0.037633333
Average from day -60 to +1	0.00577419 4	0.00635 4839	0.00527 4194	-	0.03567741 9	0.0249838 71	0.046387097
Average from day -60 to +10	0.00407042 3	0.00426 7606	0.00394 3662	-	0.07112676 1	0.0653521 13	0.076929577

Table 5.28: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2009(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	0.005	0.003	0.007	63%	0.005	0.003	0.007
-59	-0.017	-0.028	-0.008	38%	-0.012	-0.026	-0.001
-58	-0.006	0.000	-0.012	38%	-0.018	-0.025	-0.012
-57	-0.012	-0.021	-0.005	50%	-0.030	-0.047	-0.017
-56	-0.006	-0.004	-0.008	44%	-0.037	-0.051	-0.025
-55	-0.006	-0.020	0.005	50%	-0.043	-0.071	-0.021
-54	0.002	-0.008	0.010	63%	-0.040	-0.078	-0.011
-53	-0.068	-0.027	-0.099	38%	-0.108	-0.106	-0.110
-52	0.049	-0.011	0.095	31%	-0.059	-0.116	-0.015
-51	0.004	0.002	0.004	81%	-0.056	-0.114	-0.011

-50	0.008	0.013	0.005	69%	-0.047	-0.101	-0.006
-49	0.009	0.023	-0.003	50%	-0.039	-0.078	-0.009
-48	-0.006	-0.010	-0.003	56%	-0.045	-0.088	-0.012
-47	0.026	0.033	0.022	81%	-0.019	-0.055	0.010
-46	0.016	0.042	-0.004	56%	-0.002	-0.013	0.006
-45	0.080	0.009	0.135	81%	0.078	-0.004	0.141
-44	0.015	-0.010	0.034	56%	0.093	-0.014	0.175
-43	-0.010	-0.009	-0.010	50%	0.083	-0.023	0.165
-42	0.003	-0.014	0.017	50%	0.086	-0.038	0.182
-41	-0.006	-0.014	0.001	63%	0.080	-0.052	0.183
-40	-0.006	-0.009	-0.004	50%	0.074	-0.061	0.178
-39	0.007	-0.007	0.017	56%	0.080	-0.068	0.196
-38	-0.003	-0.025	0.014	38%	0.077	-0.093	0.210
-37	0.005	0.003	0.006	63%	0.082	-0.089	0.216
-36	0.011	0.051	-0.020	69%	0.094	-0.038	0.196
-35	0.013	0.036	-0.004	56%	0.107	-0.002	0.192
-34	-0.016	-0.012	-0.019	31%	0.091	-0.014	0.172
-33	0.000	0.009	-0.006	63%	0.091	-0.005	0.166
-32	0.000	-0.008	0.007	50%	0.091	-0.013	0.173
-31	0.041	0.112	-0.014	63%	0.133	0.099	0.159
-30	-0.007	-0.018	0.002	44%	0.126	0.081	0.162
-29	-0.009	-0.011	-0.006	44%	0.118	0.069	0.155
-28	0.004	0.006	0.002	56%	0.122	0.075	0.158
-27	-0.003	-0.008	0.000	38%	0.118	0.067	0.158
-26	0.016	0.036	0.000	63%	0.134	0.103	0.158
-25	0.019	0.041	0.001	56%	0.153	0.145	0.159
-24	-0.012	-0.027	0.001	38%	0.141	0.117	0.160
-23	0.008	0.002	0.012	69%	0.149	0.119	0.172
-22	-0.006	-0.003	-0.009	38%	0.143	0.117	0.163
-21	-0.011	-0.024	-0.001	44%	0.132	0.093	0.162
-20	0.000	0.002	-0.001	56%	0.132	0.095	0.161
-19	0.004	0.001	0.006	50%	0.136	0.096	0.167
-18	0.004	0.006	0.003	63%	0.140	0.102	0.169
-17	-0.003	0.012	-0.015	56%	0.137	0.114	0.154
-16	-0.006	0.004	-0.014	38%	0.131	0.118	0.140
-15	-0.004	0.007	-0.013	50%	0.127	0.125	0.128
-14	0.002	0.004	0.000	63%	0.129	0.129	0.128
-13	0.009	0.016	0.004	63%	0.138	0.145	0.133
-12	0.003	0.026	-0.015	38%	0.141	0.170	0.118
-11	0.005	0.018	-0.005	63%	0.146	0.188	0.113
-10	-0.007	-0.005	-0.009	50%	0.139	0.184	0.104
-9	0.007	0.035	-0.015	50%	0.146	0.219	0.089
-8	0.009	0.027	-0.006	63%	0.154	0.246	0.083
-7	0.010	0.007	0.012	44%	0.164	0.253	0.095
-6	-0.001	0.008	-0.008	50%	0.163	0.260	0.087
-5	0.009	0.004	0.012	50%	0.171	0.264	0.099
-4	0.008	0.007	0.009	69%	0.179	0.271	0.108
-3	0.005	0.009	0.003	75%	0.185	0.280	0.111
-2	0.019	0.023	0.016	56%	0.204	0.303	0.127
-1	0.013	0.023	0.006	56%	0.217	0.326	0.132

0	0.086	0.132	0.051	75%	0.304	0.459	0.184
1	-0.025	-0.007	-0.039	38%	0.279	0.451	0.145
2	0.026	0.040	0.015	81%	0.305	0.491	0.160
3	0.010	0.022	0.000	69%	0.315	0.513	0.160
4	0.005	0.005	0.004	56%	0.319	0.519	0.164
5	0.002	0.000	0.004	56%	0.321	0.518	0.168
6	-0.001	0.005	-0.006	50%	0.320	0.523	0.162
7	0.004	0.010	-0.002	69%	0.324	0.533	0.160
8	-0.006	-0.009	-0.003	50%	0.318	0.524	0.158
9	0.003	-0.003	0.007	56%	0.321	0.521	0.165
10	0.005	0.008	0.003	50%	0.326	0.529	0.168
Average from day -60 to -6	0.002963636	0.004745455	0.001563636	-	0.077254545	0.037254545	0.108236364
Average from day -60 to -5	0.003071429	0.004732143	0.00175	-	0.078928571	0.041303571	0.108071429
Average from day -60 to -1	0.003616667	0.00545	0.0022	-	0.08675	0.058216667	0.108833333
Average from day -60 to +1	0.004483871	0.007290323	0.002322581	-	0.093354839	0.071016129	0.110629032
Average from day -60 to +10	0.004591549	0.007464789	0.002338028	-	0.121929577	0.127802817	0.117239437

Table 5.29: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.K. in 2010(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target	Cumulative average abnormal returns (CAAR) of the clean target firms

						firms	
-60	-0.001	0.003	-0.005	56%	-0.001	0.003	-0.005
-59	0.006	0.012	-0.001	39%	0.004	0.015	-0.006
-58	0.007	0.010	0.005	50%	0.012	0.025	-0.002
-57	-0.026	-0.045	-0.008	50%	-0.015	-0.020	-0.009
-56	0.008	0.007	0.010	56%	-0.007	-0.014	0.001
-55	0.006	0.001	0.011	61%	0.000	-0.013	0.012
-54	0.003	0.003	0.002	67%	0.002	-0.010	0.014
-53	0.006	0.000	0.012	78%	0.008	-0.010	0.026
-52	-0.022	-0.034	-0.009	44%	-0.014	-0.044	0.017
-51	0.009	0.036	-0.018	33%	-0.005	-0.008	-0.001
-50	-0.002	0.000	-0.004	33%	-0.007	-0.008	-0.005
-49	-0.007	-0.008	-0.006	39%	-0.014	-0.016	-0.012
-48	0.004	0.007	0.001	56%	-0.009	-0.009	-0.010
-47	-0.004	-0.010	0.002	61%	-0.014	-0.019	-0.008
-46	0.004	0.011	-0.003	61%	-0.009	-0.008	-0.011
-45	-0.008	-0.017	0.001	56%	-0.017	-0.024	-0.010
-44	0.005	0.009	0.002	56%	-0.012	-0.016	-0.008
-43	0.010	0.011	0.010	56%	-0.001	-0.005	0.003
-42	0.002	-0.004	0.008	56%	0.001	-0.009	0.011
-41	-0.007	0.002	-0.016	33%	-0.006	-0.007	-0.005
-40	0.022	0.040	0.004	72%	0.016	0.034	-0.001
-39	0.000	-0.004	0.004	56%	0.016	0.029	0.003
-38	0.000	0.004	-0.005	61%	0.016	0.034	-0.002
-37	-0.021	-0.038	-0.003	44%	-0.005	-0.004	-0.006
-36	0.010	0.000	0.019	61%	0.005	-0.004	0.013
-35	-0.006	-0.007	-0.004	50%	-0.001	-0.012	0.010
-34	0.011	0.022	0.000	39%	0.010	0.010	0.010
-33	-0.009	-0.014	-0.004	39%	0.001	-0.003	0.006
-32	0.005	0.005	0.004	72%	0.006	0.002	0.010
-31	0.005	0.004	0.006	50%	0.011	0.006	0.016
-30	0.016	0.020	0.012	44%	0.027	0.026	0.028
-29	0.002	0.000	0.003	56%	0.029	0.026	0.031
-28	0.006	0.003	0.009	61%	0.035	0.029	0.040
-27	0.000	0.005	-0.005	44%	0.035	0.035	0.035
-26	0.009	0.008	0.010	61%	0.044	0.042	0.046
-25	-0.006	-0.006	-0.006	33%	0.038	0.037	0.039
-24	-0.001	-0.001	-0.001	50%	0.037	0.036	0.038
-23	0.003	-0.013	0.019	44%	0.040	0.023	0.057
-22	-0.007	-0.006	-0.007	39%	0.033	0.017	0.050
-21	0.008	0.007	0.008	67%	0.041	0.024	0.058
-20	0.005	0.010	0.001	61%	0.046	0.033	0.059
-19	0.001	0.007	-0.005	72%	0.047	0.040	0.054
-18	-0.002	-0.003	-0.002	56%	0.044	0.038	0.051
-17	-0.004	-0.007	-0.001	50%	0.041	0.031	0.050
-16	0.014	0.025	0.003	67%	0.054	0.056	0.053
-15	0.004	0.000	0.009	50%	0.059	0.055	0.062
-14	-0.005	0.005	-0.014	28%	0.054	0.061	0.047
-13	0.002	0.025	-0.021	50%	0.056	0.086	0.026
-12	-0.006	-0.011	-0.001	50%	0.050	0.075	0.025

-11	-0.003	-0.016	0.010	72%	0.047	0.059	0.035
-10	-0.006	-0.003	-0.008	28%	0.041	0.056	0.026
-9	0.010	0.005	0.015	61%	0.051	0.061	0.041
-8	-0.004	-0.004	-0.004	33%	0.047	0.057	0.038
-7	-0.010	-0.021	0.002	44%	0.038	0.036	0.039
-6	-0.006	0.011	-0.022	56%	0.032	0.047	0.017
-5	0.001	0.002	0.001	50%	0.033	0.049	0.018
-4	0.025	0.047	0.004	50%	0.059	0.096	0.022
-3	-0.001	-0.007	0.006	50%	0.058	0.089	0.027
-2	0.002	0.006	-0.002	39%	0.060	0.096	0.025
-1	0.067	0.144	-0.009	50%	0.128	0.239	0.016
0	0.178	0.095	0.260	78%	0.305	0.335	0.276
1	0.020	0.032	0.008	56%	0.326	0.367	0.284
2	0.088	0.165	0.012	39%	0.414	0.532	0.297
3	0.046	0.087	0.005	50%	0.460	0.619	0.302
4	-0.019	-0.033	-0.005	44%	0.441	0.586	0.297
5	-0.009	-0.019	0.002	50%	0.433	0.567	0.299
6	-0.002	-0.017	0.013	39%	0.431	0.550	0.311
7	-0.011	-0.025	0.003	50%	0.420	0.526	0.315
8	0.001	0.006	-0.003	56%	0.422	0.532	0.311
9	-0.009	-0.006	-0.012	33%	0.413	0.526	0.299
10	0.001	0.001	0.000	39%	0.413	0.527	0.299
Average from day -60 to -6	0.000545455	0.000836364	0.000345455	-	0.018854545	0.017836364	0.019927273
Average from day -60 to -5	0.000553571	0.000857143	0.000357143	-	0.019107143	0.018392857	0.019892857
Average from day -60 to -1	0.002066667	0.003966667	0.000316667	-	0.022916667	0.025833333	0.020066667
Average from day -60 to +1	0.005193548	0.005887097	0.004629032	-	0.032354839	0.036322581	0.023451613
Average from day -60 to +10	0.005746479	0.007380282	0.004253521	-	0.08243662	0.101647887	0.063295775

Table5.30: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2006(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.004344	0.006177	0.003498	53%	0.004344
-59	0.005658	0.011813	0.002818	47%	0.010002
-58	0.000708	-0.00673	0.004142	58%	0.01071
-57	-0.0005	0.003649	-0.00241	58%	0.010212
-56	-0.0052	-0.01394	-0.00117	32%	0.005011
-55	0.001587	0.006179	-0.00053	47%	0.006598
-54	8.06E-05	-0.00182	0.000958	37%	0.006679
-53	-0.00464	0.003374	-0.00834	37%	0.002036
-52	0.012851	0.016596	0.011122	63%	0.014887
-51	0.013173	0.032239	0.004374	58%	0.02806
-50	-0.00273	-0.00628	-0.0011	42%	0.025325
-49	0.014086	0.056435	-0.00546	42%	0.039411
-48	-0.00571	-0.01421	-0.00178	37%	0.033704
-47	-0.00382	-0.01048	-0.00074	42%	0.029889
-46	0.005463	0.005323	0.005528	58%	0.035352
-45	-0.00169	-0.00082	-0.00209	53%	0.033664
-44	-0.00802	-0.00898	-0.00758	32%	0.02564
-43	-0.008	-0.02026	-0.00234	26%	0.017641
-42	-0.00555	-0.00121	-0.00755	32%	0.012092
-41	-0.0077	-0.02562	0.000572	26%	0.004392
-40	0.004827	-0.00149	0.007744	53%	0.009219
-39	0.003651	-0.00296	0.0067	26%	0.01287
-38	0.002052	0.017564	-0.00511	37%	0.014922
-37	-0.006	-0.00874	-0.00473	47%	0.008926
-36	0.000858	0.00248	0.00011	47%	0.009784
-35	0.007724	0.02332	0.000526	53%	0.017509
-34	0.000653	-0.00133	0.001567	53%	0.018162
-33	-0.00281	-0.00838	-0.00024	53%	0.015349
-32	0.004928	-0.00458	0.009318	47%	0.020277
-31	-0.00224	-0.00395	-0.00145	32%	0.01804
-30	0.003989	0.011096	0.000709	42%	0.022029
-29	-0.00084	0.006414	-0.00419	42%	0.021188
-28	-0.00023	0.002654	-0.00156	53%	0.02096
-27	-0.0007	-0.0053	0.001417	42%	0.020257
-26	0.003107	0.006871	0.00137	53%	0.023363
-25	0.00233	0.010799	-0.00158	42%	0.025694
-24	-0.00616	-0.02236	0.001316	42%	0.019532
-23	0.003089	0.002128	0.003532	68%	0.022621
-22	0.004733	0.014437	0.000254	58%	0.027353
-21	-0.00039	-0.007	0.002666	53%	0.026966
-20	-0.00503	0.009628	-0.0118	32%	0.021936

-19	-0.00354	-0.01477	0.001645	37%	0.018396
-18	-8.1E-05	-0.00349	0.001495	58%	0.018315
-17	0.007386	0.034664	-0.0052	53%	0.025701
-16	0.015618	0.051478	-0.00093	47%	0.041319
-15	-0.0136	-0.02506	-0.00831	26%	0.027721
-14	-0.0122	-0.03581	-0.0013	47%	0.015526
-13	-0.00199	-0.00471	-0.00074	37%	0.013533
-12	-0.00918	-0.02219	-0.00318	21%	0.00435
-11	-0.00136	-0.00734	1.40E-03	42%	0.002991
-10	0.011302	0.029118	0.003079	53%	0.014293
-9	-0.00203	0.002189	-0.00398	42%	0.01226
-8	0.000932	0.005358	-0.00111	37%	0.013192
-7	-0.00403	-0.01551	0.001265	42%	0.009159
-6	-0.0005	-0.00182	0.00011	42%	0.00866
-5	-0.00294	-0.00389	-0.0025	32%	0.00572
-4	0.004597	3.43E-03	0.005135	84%	0.010317
-3	-0.00098	0.001735	-0.00224	53%	0.009335
-2	0.000145	-0.00321	0.001695	32%	0.00948
-1	-0.00293	-0.00344	-0.0027	42%	0.006549
0	-0.00702	-0.00987	-0.00571	32%	-0.00047
1	0.00286	0.006681	0.001096	53%	0.002386
2	-0.00172	-0.0067	0.00058	47%	0.000666
3	0.000771	-0.0096	0.005558	37%	0.001437
4	0.002708	-0.00193	0.004849	53%	0.004145
5	0.003589	-0.00865	0.009237	63%	0.007734
6	-0.0008	-0.00986	0.003377	32%	0.006931
7	0.004683	0.001493	0.006156	53%	0.011614
8	-0.00135	-0.00984	0.002576	42%	0.010268
9	0.002447	0.005712	0.00094	63%	0.012715
10	0.003042	-0.00391	0.006251	47%	0.015757
Average from day -60 to -6	0.000157429	0.000183014	-0.000313909	-	0.017782218
Average from day -60 to -5	0.000102118	0.001088446	-0.000352946	-	0.017566821
Average from day -60 to -1	0.000109177	0.000991133	-0.000297917	-	0.016990383
Average from day -60 to +1	3.85581E-05	0.000907726	-0.000362726	-	0.01647321
Average from day -60 to +10	0.00022198	0.000183014	0.00023993	-	0.015388817

Table5.31: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2007(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00319	0.006205	-0.01258	44%	-0.00319
-59	0.002372	-4.1E-05	0.004786	56%	-0.00082
-58	0.01066	0.013761	0.007558	81%	0.009844
-57	-0.00399	-0.00727	-0.00072	44%	0.005849
-56	0.00224	-0.00673	0.011213	50%	0.008089
-55	0.000956	0.000757	0.001155	38%	0.009045
-54	0.002373	0.00084	0.003906	56%	0.011418
-53	-0.00636	-0.00202	-0.0107	63%	0.005058
-52	-0.00084	-0.00279	0.001117	38%	0.004221
-51	-0.00242	-0.00459	-0.00024	44%	0.001803
-50	0.006564	-2.4E-05	0.013151	63%	0.008367
-49	0.007322	0.011877	0.002766	50%	0.015688
-48	-0.00414	0.007013	-0.0153	44%	0.011543
-47	0.003716	0.005938	0.001494	69%	0.015259
-46	-0.01179	-0.01914	-0.00443	31%	0.003471
-45	0.001605	-0.00335	0.006557	44%	0.005077
-44	0.000129	0.000897	-0.00064	56%	0.005205
-43	0.001121	0.006387	-0.00414	44%	0.006326
-42	0.002465	0.008907	-0.00398	56%	0.008791
-41	0.001302	0.0008	0.001805	56%	0.010093
-40	-0.00074	0.002736	-0.00422	50%	0.00935
-39	-0.002	-0.00616	0.002155	38%	0.007347
-38	-0.00458	-0.00111	-0.00804	38%	0.002769
-37	0.000906	0.003969	-0.00216	44%	0.003675
-36	0.003795	0.005196	0.002394	50%	0.007469
-35	0.000881	0.001152	0.00061	56%	0.00835
-34	0.001825	0.001928	0.001723	63%	0.010176
-33	0.00044	-0.00083	0.001713	56%	0.010616
-32	0.000892	-0.00336	0.005144	44%	0.011507
-31	0.002181	0.002489	0.001873	56%	0.013689
-30	-0.00012	-7.6E-05	-0.00016	44%	0.013568
-29	-0.00169	0.0003	-0.00367	50%	0.011883
-28	-0.01596	-0.03032	-0.0016	31%	-0.00408
-27	-0.00224	-0.00401	-0.00046	50%	-0.00631
-26	-0.00177	-0.00865	0.005115	31%	-0.00808
-25	0.00505	0.008447	0.001653	50%	-0.00303
-24	-0.0052	-0.00784	-0.00256	44%	-0.00823
-23	0.008123	0.003203	0.013042	69%	-0.00011
-22	-0.00427	-0.00153	-0.00702	38%	-0.00438
-21	0.013129	0.0279	-0.00164	56%	0.008746
-20	-0.00101	-0.00719	0.00517	44%	0.007735

-19	0.005405	0.008983	0.001826	56%	0.013139
-18	0.013319	0.024267	0.00237	56%	0.026458
-17	-0.0062	-0.00564	-0.00677	31%	0.020253
-16	0.000827	-0.00194	0.003594	44%	0.02108
-15	0.004941	0.009394	0.000488	63%	0.026021
-14	0.007895	0.013912	0.001878	38%	0.033916
-13	0.000703	0.00604	-0.00463	44%	0.034619
-12	0.005128	0.004565	0.005691	56%	0.039747
-11	-0.00189	-0.00493	0.001156	25%	0.037858
-10	0.001897	0.00054	0.003254	56%	0.039755
-9	1.41E-05	-0.00091	0.000938	44%	0.039769
-8	-0.00633	-0.00557	-0.00709	25%	0.03344
-7	0.004976	0.009506	0.000447	56%	0.038417
-6	-0.00296	-0.00417	-0.00175	31%	0.035456
-5	-0.00215	-0.00407	-0.00024	31%	0.033304
-4	0.002741	-0.00144	0.006918	44%	0.036045
-3	-0.00291	0.00265	-0.00847	50%	0.033135
-2	0.003215	0.0075	-0.00107	50%	0.03635
-1	-0.00356	-0.01367	0.006553	38%	0.03279
0	0.000861	-0.00776	0.009477	63%	0.033651
1	-0.00469	0.002337	-0.01172	31%	0.02896
2	-0.00223	-0.00359	-0.00087	44%	0.026731
3	-0.00055	-0.00461	0.003508	56%	0.02618
4	-0.00108	0.000659	-0.00281	38%	0.025103
5	-0.00296	-0.00646	0.000548	44%	0.022145
6	-0.00478	-0.00327	-0.00629	44%	0.017363
7	0.003178	0.00597	0.000385	69%	0.020541
8	-0.00145	-1.55E-06	-0.0029	25%	0.019088
9	0.001725	0.002772	0.000678	50%	0.020813
10	-0.00132	0.003159	-0.00581	44%	0.019489
Average from day -60 to -6	0.000644765	0.001049418	0.000240764	-	0.012249545
Average from day -60 to -5	0.000594859	0.000958	0.000232179	-	0.012625518
Average from day -60 to -1	0.000546635	0.000811467	0.000282217	-	0.01408915
Average from day -60 to +1	0.000467244	0.000697823	0.000236935	-	0.014644516
Average from day -60 to +10	0.000274677	0.000533711	1.59014E-05	-	0.015569197

Table5.32: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2008(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.009077	0.010419	0.0074	67%	0.009077
-59	0.003804	0.00194	0.006134	56%	0.012881
-58	0.008029	0.015504	-0.00131	44%	0.02091
-57	0.003292	0.004891	0.001292	56%	0.024202
-56	-0.00755	-0.00579	-0.00976	33%	0.016647
-55	0.002591	0.002083	0.003227	50%	0.019238
-54	0.00288	0.006245	-0.00133	44%	0.022119
-53	-0.00589	-0.01095	4.31E-04	44%	0.016228
-52	-0.00718	-0.00526	-0.00958	33%	0.00905
-51	0.006569	0.011032	0.000989	56%	0.015619
-50	0.007341	0.007449	0.007207	44%	0.02296
-49	0.010614	0.015546	0.004448	61%	0.033574
-48	-0.00712	-0.0151	0.002848	33%	0.026453
-47	-0.00112	-0.00346	1.81E-03	61%	0.025338
-46	-0.0002	-0.00108	0.000912	44%	0.02514
-45	0.006749	0.010405	0.002179	67%	0.031889
-44	-0.00403	-0.00927	0.002529	50%	0.027863
-43	-0.00768	-0.01746	0.004553	44%	0.020187
-42	0.010332	0.015496	0.003878	67%	0.030519
-41	0.011304	0.019515	0.00104	78%	0.041822
-40	0.003203	0.011787	-0.00753	67%	0.045025
-39	0.00098	-0.00806	0.012283	50%	0.046006
-38	0.003628	0.004431	0.002624	44%	0.049634
-37	-0.00819	-0.01187	-0.00359	50%	0.041447
-36	0.011254	0.019658	0.00075	61%	0.052701
-35	-0.00665	-0.00859	-0.00422	56%	0.046052
-34	-0.00301	-0.0103	0.006111	67%	0.043047
-33	0.004957	0.019202	-0.01285	50%	0.048004
-32	0.002664	0.003259	0.001921	56%	0.050668
-31	-0.00316	-0.00887	0.003971	67%	0.047504
-30	0.005047	6.18E-05	0.011278	44%	0.052551
-29	0.005451	0.008527	0.001605	56%	0.058001
-28	0.01769	0.029057	0.003482	78%	0.075691
-27	-0.00551	-0.00528	-0.0058	50%	0.070176
-26	0.010723	0.02138	-0.0026	44%	0.080899
-25	-0.00213	-0.0081	0.005328	56%	0.078765
-24	0.00057	0.004812	-0.00473	56%	0.079335
-23	-0.00908	-0.01992	0.00447	56%	0.070256
-22	-0.00356	-0.00579	-0.00077	44%	0.066698
-21	0.003942	0.003093	0.005003	50%	0.070639
-20	-0.01446	-0.02286	-0.00395	44%	0.056182

-19	-0.00477	-0.01396	0.00672	50%	0.051416
-18	0.002375	-0.00358	0.009825	61%	0.053791
-17	0.008999	0.005522	0.013345	67%	0.06279
-16	-0.00521	0.00244	-0.01478	28%	0.057578
-15	-0.01161	-0.01483	-0.00757	39%	0.045972
-14	0.018251	0.023061	0.012239	78%	0.064223
-13	-0.0045	-0.00061	-0.00936	39%	0.059728
-12	-0.01438	-0.0194	-0.00811	28%	0.045348
-11	0.004642	0.009497	-0.00143	56%	0.04999
-10	-0.00477	8.07E-05	-0.01083	39%	0.04522
-9	-0.00375	-0.00881	0.002578	39%	0.041472
-8	0.007071	0.000395	0.015416	67%	0.048543
-7	-0.00289	0.003604	-0.011	44%	0.045654
-6	0.008497	0.003147	0.015183	67%	0.054151
-5	0.005214	0.010086	-0.00088	56%	0.059365
-4	0.010572	0.017308	0.00215	44%	0.069937
-3	0.004581	0.006691	0.001944	67%	0.074518
-2	-0.00319	-0.00731	0.001964	50%	0.071328
-1	-0.00175	-0.01124	0.010113	50%	0.069576
0	-0.01199	-0.01244	-0.01142	39%	0.057588
1	0.005417	0.00233	0.009277	44%	0.063005
2	-0.01632	-0.02387	-0.00688	28%	0.046684
3	0.006686	0.01136	0.000844	67%	0.05337
4	0.005577	-0.00056	0.013246	72%	0.058948
5	-0.00697	-0.00637	-0.00772	50%	0.051979
6	0.002345	-0.00114	0.0067	67%	0.054324
7	-0.00344	-0.01372	0.009405	67%	0.050883
8	0.003202	0.0003	0.006831	28%	0.054085
9	-0.00357	-0.00385	-0.00322	50%	0.050516
10	-0.01944	-0.03004	-0.0062	39%	0.031073
Average from day -60 to -6	0.000984109	0.000987991	0.000980164	-	0.043761327
Average from day -60 to -5	0.001059643	0.001150455	0.000946946	-	0.044039964
Average from day -60 to -1	0.001159217	0.001164575	0.001153333	-	0.04585995
Average from day -60 to +1	0.001015806	0.000963944	0.001081565	-	0.046325645
Average from day -60 to +10	0.000437324	-0.000114444	0.001127648	-	0.046817634

Table5.33: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2009(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.016451	0.018651	0.01474	69%	0.016451
-59	-0.01939	-0.02621	-0.0141	25%	-0.00294
-58	0.013627	0.038619	-0.00581	44%	0.010683
-57	0.036373	0.069852	0.010335	75%	0.047056
-56	0.020587	0.058921	-0.00923	63%	0.067644
-55	0.013003	0.014462	0.011869	56%	0.080647
-54	0.007273	0.020191	-0.00278	38%	0.087919
-53	-0.00617	-0.00787	-0.00485	31%	0.081748
-52	0.005547	0.011348	0.001035	38%	0.087296
-51	0.000703	-0.0054	0.005454	44%	0.087999
-50	-0.01117	-0.00466	-0.01623	19%	0.076829
-49	0.006348	0.01555	-0.00081	44%	0.083178
-48	0.012844	0.001013	0.022046	38%	0.096022
-47	-0.00346	-0.01306	0.004012	50%	0.092563
-46	0.013517	0.027894	0.002335	69%	0.10608
-45	-0.00019	0.004922	-0.00416	69%	0.105893
-44	-0.00693	-0.0139	-0.0015	31%	0.098966
-43	0.009394	0.011134	0.008041	69%	0.108361
-42	-0.00607	0.005431	-0.01502	38%	0.102286
-41	0.010725	0.019243	0.0041	50%	0.11301
-40	-0.0087	-0.0011	-0.01462	31%	0.104307
-39	0.021893	0.022981	0.021047	75%	0.1262
-38	-0.00804	-0.01726	-0.00087	31%	0.118156
-37	-0.01379	-0.03923	0.005997	44%	0.104368
-36	0.005518	-0.00753	0.015667	56%	0.109885
-35	0.00151	0.015623	-0.00947	50%	0.111395
-34	-0.00413	0.006183	-0.01214	50%	0.107269
-33	-0.00414	-0.00669	-0.00215	44%	0.103132
-32	0.005002	0.024368	-0.01006	44%	0.108134
-31	0.006415	0.008415	0.004859	50%	0.114549
-30	-0.00252	-0.00822	0.001917	44%	0.112031
-29	-0.00118	0.001322	-0.00312	44%	0.110856
-28	-0.00823	-0.00999	-0.00685	38%	0.102629
-27	0.020234	0.029129	0.013315	69%	0.122863
-26	-0.01271	-0.02787	-0.00093	38%	0.110149
-25	0.005235	0.014888	-0.00227	56%	0.115383
-24	0.007325	0.034666	-0.01394	44%	0.122709
-23	-0.00565	0.007742	-0.01606	38%	0.117063
-22	0.005709	0.008711	0.003374	69%	0.122772
-21	0.038318	0.084912	0.002079	44%	0.16109
-20	0.011088	0.020196	0.004003	50%	0.172178

-19	-0.00489	-0.02034	0.007133	56%	0.167291
-18	-0.00057	0.000784	-0.00162	25%	0.166724
-17	0.008451	0.0139	0.004214	50%	0.175175
-16	-0.00692	-0.01163	-0.00326	31%	0.168254
-15	-0.00168	-0.00765	0.002962	44%	0.166575
-14	0.000862	0.003976	-0.00156	31%	0.167437
-13	-0.00865	0.000733	-0.01594	31%	0.15879
-12	0.01721	0.032165	0.005578	69%	0.176
-11	-0.01529	-0.01305	-0.01703	19%	0.160708
-10	-0.00346	-0.00468	-0.00251	31%	0.157246
-9	-0.00522	0.000913	-0.01	56%	0.152022
-8	0.011099	0.023463	0.001483	44%	0.163121
-7	0.01431	0.02322	0.007381	56%	0.177431
-6	0.02069	0.026135	0.016455	63%	0.198121
-5	-0.0055	2.03E-05	-0.0098	38%	0.192617
-4	0.036871	0.074967	0.007241	75%	0.229488
-3	8.12E-06	-0.00051	0.000414	38%	0.229496
-2	0.002067	0.005358	-0.00049	44%	0.231563
-1	-0.0044	-0.01418	0.003202	44%	0.22716
0	0.019327	0.026406	0.013821	50%	0.246487
1	0.007974	-0.00929	0.021402	69%	0.254461
2	0.001803	2.48E-05	0.003187	31%	0.256264
3	-0.01139	-0.0332	0.005567	19%	0.24487
4	0.00877	0.01365	0.004975	56%	0.25364
5	0.002156	0.001327	0.0028	50%	0.255795
6	-0.00648	-0.02126	0.005007	44%	0.249312
7	-0.00154	-0.00347	-3E-05	44%	0.247777
8	0.004052	0.012137	-0.00224	50%	0.251829
9	-0.00144	0.010233	-0.01052	38%	0.250386
10	0.006434	0.031986	-0.01344	56%	0.25682
Average from day -60 to -6	0.003602018	0.008642109	-0.000317436	-	0.115994618
Average from day -60 to -5	0.003439482	0.008488148	-0.000486768	-	0.117362875
Average from day -60 to -1	0.003785952	0.009016188	-0.000281533	-	0.1248338
Average from day -60 to +1	0.004104163	0.009001408	0.000295661	-	0.12888671
Average from day -60 to +10	0.003617227	0.008021339	0.00019207	-	0.144474211

Table5.34: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.K. in 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.010277	0.025514	0.002659	67%	0.010277
-59	0.010022	0.02371	0.003178	61%	0.020299
-58	0.001631	0.012697	-0.0039	67%	0.02193
-57	0.004773	0.016625	-0.00115	61%	0.026703
-56	-0.00686	-0.01086	-0.00486	28%	0.019846
-55	0.001284	-0.00277	0.003313	39%	0.02113
-54	0.006067	0.001658	0.008271	39%	0.027196
-53	0.011842	0.008965	0.01328	61%	0.039038
-52	-0.01362	-0.01508	-0.01288	39%	0.025423
-51	0.004824	0.003506	0.005482	61%	0.030246
-50	0.014139	0.010625	0.015896	44%	0.044385
-49	-0.00277	-0.0051	-0.0016	39%	0.041619
-48	-0.00166	0.008904	-0.00694	44%	0.039964
-47	0.000629	-0.00055	0.001218	44%	0.040593
-46	0.006094	-0.00187	0.010076	39%	0.046687
-45	0.000147	0.00424	-0.0019	50%	0.046834
-44	0.000354	0.000395	0.000333	50%	0.047188
-43	-0.0028	-9.3E-05	-0.00415	44%	0.044389
-42	0.002996	0.00413	0.00243	56%	0.047386
-41	-0.00097	0.013398	-0.00815	44%	0.046416
-40	0.010777	0.003199	0.014566	33%	0.057192
-39	0.000604	-0.01586	0.008838	50%	0.057796
-38	0.000788	0.001108	0.000628	44%	0.058584
-37	-0.00073	-0.00526	0.001534	39%	0.057855
-36	0.002787	0.007041	0.000661	61%	0.060642
-35	-0.00079	0.00419	-0.00328	56%	0.05985
-34	0.009045	0.013537	0.006799	44%	0.068895
-33	0.004978	0.002935	0.006	56%	0.073873
-32	-0.00344	0.002369	-0.00635	39%	0.070431
-31	-0.00544	0.005076	-0.0107	44%	0.06499
-30	-0.00351	-0.00144	-0.00455	56%	0.061477
-29	-0.00585	0.003294	-0.01041	33%	0.055632
-28	-0.00079	0.001483	-0.00193	56%	0.054842
-27	0.004995	0.00536	0.004813	56%	0.059838
-26	-0.0001	0.001235	-0.00077	44%	0.059738
-25	0.016458	0.014047	0.017664	78%	0.076196
-24	0.003161	0.00555	0.001967	56%	0.079357
-23	-9.3E-05	-0.00341	0.001567	33%	0.079264
-22	-0.00255	0.005254	-0.00646	39%	0.07671
-21	0.002008	-0.00073	0.003376	56%	0.078718
-20	0.006051	0.011289	0.003432	78%	0.084769

-19	0.012008	0.016958	0.009534	83%	0.096777
-18	-0.00245	0.021493	-0.01442	56%	0.094327
-17	-0.00558	0.008564	-0.01265	39%	0.08875
-16	-0.00304	0.003998	-0.00656	44%	0.085708
-15	0.000557	-0.00695	0.00431	39%	0.086265
-14	0.008861	0.013822	0.00638	61%	0.095126
-13	-0.00693	-0.00422	-0.00829	39%	0.088195
-12	0.004979	0.000921	0.007009	50%	0.093174
-11	-0.00786	-0.0067	-0.00844	33%	0.085316
-10	-0.0033	-0.00638	-0.00175	39%	0.082019
-9	-0.0032	-0.00622	-0.00169	28%	0.078819
-8	0.005205	-0.00406	0.009837	56%	0.084024
-7	-0.00625	-0.00087	-0.00893	44%	0.077777
-6	0.005695	0.005798	0.005644	44%	0.083472
-5	0.022255	0.014882	0.025942	72%	0.105727
-4	-0.00451	-0.00181	-0.00586	50%	0.101216
-3	0.011699	-0.00341	0.019255	56%	0.112916
-2	-0.00231	-0.002	-0.00247	56%	0.110602
-1	0.002585	0.010246	-0.00125	56%	0.113187
0	-0.01407	0.017056	-0.02963	33%	0.099119
1	-0.01328	-0.02995	-0.00495	22%	0.085837
2	-0.008	-0.00776	-0.00812	17%	0.077839
3	0.005177	-0.00075	0.008141	61%	0.083017
4	-0.00393	-0.0076	-0.00209	50%	0.079091
5	0.005399	0.005241	0.005477	61%	0.08449
6	-0.00018	-0.00204	0.000757	39%	0.084313
7	0.001001	0.007259	-0.00213	72%	0.085314
8	-0.00669	-0.00665	-0.00671	33%	0.078626
9	-0.00474	-0.00267	-0.00577	44%	0.073887
10	-0.0007	0.007196	-0.00464	50%	0.073191
Average from day -60 to -6	0.001517327	0.003535727	0.000508818	-	0.060071764
Average from day -60 to -5	0.001887643	0.003738339	0.000962982	-	0.060887036
Average from day -60 to -1	0.0018862	0.00353955	0.001060033	-	0.064126583
Average from day -60 to +1	0.001384226	0.003217403	0.000468097	-	0.065041145
Average from day -60 to +10	0.001030408	0.00270007	0.00019296	-	0.06693407

Table 5.62: Augmented Dicky-Fuller test in the targets and bidders in U.K 2006

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
T0601/stationary	0.00	B0601/stationary	0.00
T0602/stationary	0.00	B0602/stationary	0.00
T0603/stationary	0.00	B0603/stationary	0.00
T0604/stationary	0.00	B0604/stationary	0.00
T0605/stationary	0.00	B0605/stationary	0.00
T0606/stationary	0.00	B0606/stationary	0.00
T0607/stationary	0.00	B0607/stationary	0.00
T0608/stationary	0.00	B0608/stationary	0.00
T0609/stationary	0.00	B0609/stationary	0.00
T0610/stationary	0.00	B0610/stationary	0.00
T0611/stationary	0.00	B0611/stationary	0.00
T0612/stationary	0.00	B0612/stationary	0.00
T0613/stationary	0.00	B0613/stationary	0.00
T0614/stationary	0.00	B0614/stationary	0.00
T0615/stationary	0.00	B0615/stationary	0.00
T0616/stationary	0.00	B0616/stationary	0.00
T0617/stationary	0.00	B0617/stationary	0.00
T0618/stationary	0.00	B0618/stationary	0.00
T0619/stationary	0.00	B0619/stationary	0.00

Table 5.63: Augmented Dicky-Fuller test in the targets and bidders in U.K 2007

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
T0701/stationary	0.00	B0701/stationary	0.00
T0702/stationary	0.00	B0702/stationary	0.00
T0703/stationary	0.00	B0703/stationary	0.00
T0704/stationary	0.00	B0704/stationary	0.00
T0705/stationary	0.00	B0705/stationary	0.00
T0706/stationary	0.00	B0706/stationary	0.00
T0707/stationary	0.00	B0707/stationary	0.00
T0708/stationary	0.00	B0708/stationary	0.00
T0709/stationary	0.00	B0709/stationary	0.00
T0710/stationary	0.00	B0710/stationary	0.00
T0711/stationary	0.00	B0711/stationary	0.00
T0712/stationary	0.00	B0712/stationary	0.00
T0713/stationary	0.00	B0713/stationary	0.00
T0714/stationary	0.00	B0714/stationary	0.00
T0715/stationary	0.00	B0715/stationary	0.00
T0716/stationary	0.00	B0716/stationary	0.00

Table 5.64: Augmented Dicky-Fuller test in the targets and bidders in U.K 2008

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
T0801/stationary	0.00	B0801/stationary	0.00
T0802/stationary	0.00	B0802/stationary	0.00
T0803/stationary	0.00	B0803/stationary	0.00
T0804/stationary	0.00	B0804/stationary	0.00
T0805/stationary	0.00	B0805/stationary	0.00
T0806/stationary	0.00	B0806/stationary	0.00
T0807/stationary	0.00	B0807/stationary	0.00
T0808/stationary	0.00	B0808/stationary	0.00
T0809/stationary	0.00	B0809/stationary	0.00
T0810/stationary	0.00	B0810/stationary	0.00
T0811/stationary	0.00	B0811/stationary	0.00
T0812/stationary	0.00	B0812/stationary	0.00
T0813/stationary	0.00	B0813/stationary	0.00
T0814/stationary	0.00	B0814/stationary	0.00
T0815/stationary	0.00	B0815/stationary	0.00
T0816/stationary	0.00	B0816/stationary	0.00
T0817/stationary	0.00	B0817/stationary	0.00
T0818/stationary	0.00	B0818/stationary	0.00

Table 5.65: Augmented Dicky-Fuller test in the targets and bidders in U.K 2009

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
T0901/stationary	0.00	B0901/stationary	0.00
T0902/stationary	0.00	B0902/stationary	0.00
T0903/stationary	0.00	B0903/stationary	0.00
T0904/stationary	0.00	B0904/stationary	0.00
T0905/stationary	0.00	B0905/stationary	0.00
T0906/stationary	0.00	B0906/stationary	0.00
T0907/stationary	0.00	B0907/stationary	0.00
T0908/stationary	0.00	B0908/stationary	0.00
T0909/stationary	0.00	B0909/stationary	0.00
T0910/stationary	0.00	B0910/stationary	0.00
T0911/stationary	0.00	B0911/stationary	0.00
T0912/stationary	0.00	B0912/stationary	0.00
T0913/stationary	0.00	B0913/stationary	0.00
T0914/stationary	0.00	B0914/stationary	0.00
T0915/stationary	0.00	B0915/stationary	0.00
T0916/stationary	0.00	B0916/stationary	0.00

Table 5.66: Augmented Dicky-Fuller test in the targets and bidders in U.K 2010

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
T1001/stationary	0.00	B1001/stationary	0.00

T1002/stationary	0.00	B1002/stationary	0.00
T1003/stationary	0.00	B1003/stationary	0.00
T1004/stationary	0.00	B1004/stationary	0.00
T1005/stationary	0.00	B1005/stationary	0.00
T1006/stationary	0.00	B1006/stationary	0.00
T1007/stationary	0.00	B1007/stationary	0.00
T1008/stationary	0.00	B1008/stationary	0.00
T1009/stationary	0.00	B1009/stationary	0.00
T1010/stationary	0.00	B1010/stationary	0.00
T1011/stationary	0.00	B1011/stationary	0.00
T1012/stationary	0.00	B1012/stationary	0.00
T1013/stationary	0.00	B1013/stationary	0.00
T1014/stationary	0.00	B1014/stationary	0.00
T1015/stationary	0.00	B1015/stationary	0.00
T1016/stationary	0.00	B1016/stationary	0.00
T1017/stationary	0.00	B1017/stationary	0.00
T1018/stationary	0.00	B1018/stationary	0.00

Table 5.71: The names and announcement dates for both the target and acquiring firms in the U.K in 2006

Target	**Bidder**	**Announcement date**	**Industry**
T0601	B0601	2006	Retail
T0602	B0602	2006	High Technology
T0603	B0603	2006	Healthcare
T0604	B0604	2006	Media and Entertainment
T0605	B0605	2006	Healthcare
T0606	B0606	2006	Financials
T0607	B0607	2006	Real Estate
T0608	B0608	2006	Financials
T0609	B0609	2006	Financials
T0610	B0610	2006	Consumer Products and Services
T0611	B0611	2006	Financials
T0612	B0612	2006	Consumer Products and Services
T0613	B0613	2006	Healthcare
T0614	B0614	2006	Consumer Staples
T0615	B0615	2006	High Technology
T0616	B0616	2006	Consumer Products and Services
T0617	B0617	2006	Retail
T0618	B0618	2006	Healthcare
T0619	B0619	2006	Telecommunications

Table 5.72: The names and announcement dates for both the target and acquiring firms in the U.K in 2007

Target	**Bidder**	**Announcement date**	**Industry**
T0701	B0701	2007	Industrials

T0702	B0702	2007	High Technology
T0703	B0703	2007	Energy and Power
T0704	B0704	2007	Healthcare
T0705	B0705	2007	Healthcare
T0706	B0706	2007	Consumer Staples
T0707	B0707	2007	Industrials
T0708	B0708	2007	Materials
T0709	B0709	2007	High Technology
T0710	B0710	2007	Consumer Products and Services
T0711	B0711	2007	Healthcare
T0712	B0712	2007	Consumer Products and Services
T0713	B0713	2007	Consumer Products and Services
T0714	B0714	2007	Media and Entertainment
T0715	B0715	2007	Materials
T0716	B0716	2007	Financials

Table 5.73: The names and announcement dates for both the target and acquiring firms in the U.K in 2008

Target	**Bidder**	**Announcement date**	**Industry**
T0801	B0801	2008	High Technology
T0802	B0802	2008	Retail
T0803	B0803	2008	High Technology
T0804	B0804	2008	Telecommunications
T0805	B0805	2008	Industrials
T0806	B0806	2008	Healthcare
T0807	B0807	2008	Telecommunications
T0808	B0808	2008	High Technology
T0809	B0809	2008	High Technology
T0810	B0810	2008	Financials
T0811	B0811	2008	Industrials
T0812	B0812	2008	Materials
T0813	B0813	2008	Retail
T0814	B0814	2008	High Technology
T0815	B0815	2008	Consumer Products and Services
T0816	B0816	2008	High Technology
T0817	B0817	2008	Energy and Power
T0818	B0818	2008	Materials

Table 5.74: The names and announcement dates for both the target and acquiring firms in the U.K in 2009

Target	**Bidder**	**Announcement date**	**Industry**
T0901	B0901	2009	Media and Entertainment
T0902	B0902	2009	Consumer

			Products and Services
T0903	B0903	2009	Retail
T0904	B0904	2009	Financials
T0905	B0905	2009	High Technology
T0906	B0906	2009	Healthcare
T0907	B0907	2009	Materials
T0908	B0908	2009	Financials
T0909	B0909	2009	Materials
T0910	B0910	2009	Consumer Products and Services
T0911	B0911	2009	Materials
T0912	B0912	2009	Industrials
T0913	B0913	2009	Real Estate
T0914	B0914	2009	High Technology
T0915	B0915	2009	Healthcare
T0916	B0916	2009	Energy and Power

Table 5.75: The names and announcement dates for both the target and acquiring firms in the U.K in 2010

Target	**Bidder**	**Announcement date**	**Industry**
T1001	B1001	2010	Energy and Power
T1002	B1002	2010	Healthcare
T1003	B1003	2010	Financials
T1004	B1004	2010	Healthcare
T1005	B1005	2010	Matrials
T1006	B1006	2010	Real Estate
T1007	B1007	2010	High Technology
T1008	B1008	2010	Industrials
T1009	B1009	2010	Consumer Products and Services
T1010	B1010	2010	Financials
T1011	B1011	2010	Consumer Products and Services
T1012	B1012	2010	Retail
T1013	B1013	2010	Financials
T1014	B1014	2010	Financials
T1015	B1015	2010	Financials
T1016	B1016	2010	Retail
T1017	B1017	2010	High Technology
T1018	B1018	2010	Healthcare

Table 5.76: The firms' names and the days on which the firms have abnormal returns in the U.K 2006

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
T0601	-8 day	0.17752	10.40	B0601	Nothing	-	-
T0602	-21 day	0.25573	6.25	B0602	Nothing	-	-
T0603	Nothing	-	-	B0603	-48 day	0.0333	3.34
					-47 day	0.0402	4.04
T0604	-6 day	0.06139	3.97	B0604	Nothing	-	-
T0605	Nothing	-	-	B0605	Nothing	-	-
T0606	Nothing	-	-	B0606	-52 day	0.12031	2.39
					-51 day	0.18106	3.59
					-49 day	0.33892	7.40
T0607	-31 day	0.12597	-1.68	B0607	Nothing	-	-
T0608	-23 day	0.02729	2.87	B0608	Nothing	-	-
	-22 day	0.03318	3.48				
T0609	Nothing	-	-	B0609	Nothing	-	-
T0610	-32 day	0.02412	2.03	B0610	Nothing	-	-
	-30 day	0.04865	4.10				
	-29 day	0.07943	7.08				
	-9 day	0.06312	5.34				
T0611	-22 day	0.13727	3.89	B0611	Nothing	-	-
	-1 day	0.22224	6.69				
T0612	Nothing	-	-	B0612	-38 day	0.158729	9.57
					-32 day	-0.07922	-4.79
T0613	Nothing	-	-	B0613	Nothing	-	-
T0614	Nothing	-	-	B0614	Nothing	-	-
T0615	Nothing	-	-	B0615	-43 day	-0.05706	-2.56

					-41 day	-0.07576	3.53
					-22 day	0.047652	2.12
T0616	Nothing	-	-	B0616	-56 day	-0.07305	-2.44
					-24 day	-0.17536	-6.65
					-21 day	-0.07159	-2.73
					-20 day	0.095301	3.64
					-12 day	-0.06757	-2.36
					-10 day	0.123427	4.32
T0617	Nothing	-	-	B0617	Nothing	-	-
T0618	Nothing	-	-	B0618	-17 day	0.170675	3.16
					-16 day	0.257746	4.78
					-15 day	-0.12027	-2.23
T0619	Nothing	-	-		Nothing	-	-

Table 5.77: The firms' names and the days on which the firms have abnormal returns in the U.K 2007

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
T0701	-34 day	0.052112	2.03	B0701	Nothing	-	-
	-33 day	0.082267	3.21				
T0702	-2 day	0.132315	2.52	B0702	Nothing	-	-
	-1 day	0.351679	6.72				
T0703	-37 day	0.077910	3.11	B0703	-23 day	0.056932	4.23
	-35 day	-0.07012	-2.80		-21 day	0.156868	11.62
	-23 day	0.084282	3.33				
	-22 day	0.060703	2.40				
T0704	Nothing	-	-	B0704	Nothing	-	-

T0705	-1 day	0.33214	17.24	B0705	Nothing	-	-
T0706	-31 day	-0.1343	1.43	B0706	-28 day	-0.16286	-8.76
	-1 day	0.27832	10.79		-26 day	-0.05270	-2.86
T0707	Nothing	-	-	B0707	-31 day	0.03723	2.71
					-30 day	0.02972	2.16
					-27 day	-0.0332	-2.39
					-26 day	-0.0312	-2.41
T0708	Nothing	-	-	B0708	-43 day	0.04828	2.97
					-42 day	0.05026	3.09
					-40 day	0.04202	2.56
					-2 day	0.05887	3.52
T0709	Nothing	-	-	B0709	Nothing	-	-
T0710	-8 day	0.07397	2.78	B0710	-20 day	-0.21559	-5.62
	-4 day	0.13393	6.70		-18 day	0.18690	13.20
	-3 day	0.07777	3.85		-15 day	-0.04420	-3.12
T0711	-1 day	0.26061	14.36	B0711	Nothing	-	-
T0712	-13 day	0.15832	8.45	B0712	-14 day	0.07238	4.71
					-12 day	0.03773	2.46
					-6 day	0.04344	2.72
					-2 day	-0.04953	-3.15
					-1 day	-0.04622	-2.94
T0713	-1 day	0.09254	6.07	B0713	-58 day	0.05448	4.21
T0714	-57 day	0.50494	24.85	B0714	Nothing	-	-
	-56 day	0.10572	5.19				
	-55 day	0.13932	6.87				
T0715	-34 day	0.10661	15.08	B0715	Nothing	-	-
T0716	-48 day	-0.1302	-5.27	B0716	-9 day	-0.03069	-2.28

Table 5.78: The firms' names and the days on which the firms have abnormal returns in the U.K 2008

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
T0801	-38 day	-0.2494	-20.63	B0801	Nothing	-	-
	-19 day	-0.0928	-4.44				
	-12 day	0.07864	3.72				
T0802	-42 day	-0.4840	-5.60	B0802	-34 day	-0.0674	-3.36
	-36 day	-0.2240	-2.45		-32 day	-0.0846	-4.11
	-35 day	-0.2881	-3.23				
	-29 day	0.28604	3.12				
T0803	Nothing	-	-	B0803	Nothing	-	-
T0804	Nothing	-	-	B0804	-23 day	-0.1196	-3.12
					-20 day	-0.2156	-5.62
T0805	-18 day	0.1124	7.25	B0805	Nothing	-	-
T0806	Nothing	-	-	B0806	-42 day	0.1306	3.95
T0807	-23 day	0.2581	9.19	B0807	Nothing	-	-
	-22 day	0.1332	4.74				
T0808	Nothing	-	-	B0808	-29 day	0.0454	2.17
					-28 day	0.0553	2.62
T0809	-33 day	0.16597	4.27	B0809	Nothing	-	-
	-32 day	0.1098	2.82				
	-1 day	0.13652	3.39				
T0810	Nothing	-	-	B0810	Nothing	-	-
T0811	-1 day	0.3150	8.95	B0811	-17 day	-0.0634	-2.81
					-7 day	0.06165	-2.62
T0812	-22 day	0.17167	4.43	B0812	-17 day	0.09722	2.73
	-21 day	0.40383	10.41				

	-20 day	-0.0823	-2.12				
T0813	-9 day	0.18454	4.11	B0813	Nothing	-	-
T0814	Nothing	-	-	B0814	-47 day	0.05247	2.63
					-29 day	0.07191	3.73
					-26 day	0.04189	2.18
T0815	Nothing	-	-	B0815	-28 day	0.09207	2.95
T0816	Nothing	-	-	B0816	Nothing	-	-
T0817	-48 day	0.1556	3.94	B0817	-36 day	0.10623	3.85
	-47 day	0.0982	2.49				
	-1 day	0.27600	8.46				
T0818	Nothing	-	-	B0818	-56 day	-0.0716	-4.22
					-44 day	0.07387	4.38
					-40 day	-0.0342	-2.02

Table 5.79: The firms' names and the days on which the firms have abnormal returns in the U.K 2009

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
T0901	-9 day	0.12148	6.77	B0901	-58 day	0.04159	2.07
	-6 day	0.04597	2.56				
	-5 day	-0.0442	-2.46				
T0902	-36 day	0.16846	4.72	B0902	Nothing	-	-
T0903	Nothing	-	-	B0903	Nothing	-	-
T0904	Nothing	-	-	B0904	Nothing	-	-
T0905	Nothing	-	-	B0905	Nothing	-	-
T0906	-31 day	0.75396	22.31	B0906	Nothing	-	-
	-30 day	-0.0904	-2.68				
T0907	Nothing	-	-	B0907	Nothing	-	-

T0908	-1 day	0.2008	2.92	B0908	Nothing	-	-
T0909	Nothing	-	-	B0909	Nothing	-	-
T0910	Nothing	-	-	B0910	Nothing	-	-
T0911	Nothing	-	-	B0911	-58 day	0.17626	2.20
					-21 day	0.57921	8.41
					-4 day	0.48451	6.64
T0912	Nothing	-	-	B0912	Nothing	-	-
T0913	-53 day	-0.2191	-3.05	B0913	-59 day	-0.1872	-4.08
	-49 day	0.14280	2.07		-57 day	0.15030	3.30
	-46 day	0.28329	4.12		-46 day	0.09965	2.07
	-12 day	0.19252	2.77				
	-10 day	0.20942	3.01				
T0914	-12 day	-0.0829	-3.15	B0914	-8 day	0.22526	5.29
	-7 day	0.19121	8.29				
T0915	-8 day	0.12892	4.57	B0915	Nothing	-	-
T0916	Nothing	-	-	B0916	-18 day	0.16725	4.08

Table 5.80: The firms' names and the days on which the firms have abnormal returns in the U.K 2010

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
T1001	Nothing	-	-	B1001	Nothing	-	-
T1002	-46 day	0.11320	4.17	B1002	Nothing	-	-
	-44 day	0.05855	2.11				
	-43 day	0.07673	2.79				
	-23 day	-0.1110	-4.09				
	-16 day	0.20929	8.75				
T1003	-57 day	-0.7214	-4.14	B1003	-1 day	0.04557	2.62

	-1 day	0.92259	5.48				
T1004	Nothing	-	-	B1004	Nothing	-	-
T1005	-4 day	0.12301	3.06	B1005	-18 day	0.03551	3.25
T1006	Nothing	-	-	B1006	-18 day	0.03502	3.22
T1007	-7 day	-0.0945	-4.90	B1007	-34 day	0.10173	4.30
T1008	Nothing	-	-	B1008	Nothing	-	-
T1009	Nothing	-	-	B1009	Nothing	-	-
T1010	-11 day	-0.1703	-7.40	B1010	Nothing	-	-
T1011	-36 day	0.18719	7.82	B1011	Nothing	-	-
	-4 day	0.08182	4.14				
	-1 day	0.24631	12.46				
T1012	Nothing	-	-	B1012	Nothing	-	-
T1013	Nothing	-	-	B1013	-19 day	0.02943	2.04
					-18 day	0.02874	1.99
T1014	Nothing	-	-	B1014	Nothing	-	-
T1015	-13 day	0.21803	3.95	B1015	Nothing	-	-
T1016	Nothing	-	-	B1016	Nothing	-	-
T1017	-2 day	0.06268	3.28	B1017	Nothing	-	-
	-1 day	0.04677	2.45				
T1018	-57 day	0.28815	5.01	B1018	Nothing	-	-

Chapter 6 Insider trading in domestic U.S M&As from 2006 to 2010

Section 6.1 Introduction

Chapter 6 is the analysis of insider trading in U.S M&As. The source of the data is given—all the data ranging from 2006 to 2010 in the U.S are collected with Datastream. Tables 6.60-6.64 included in the appendix give the names, the M&A announcement dates and the industries of the U.S targets and bidders from 2006 to 2010. The models, as well as the method used in this chapter are the same with those in the previous chapter. Similar with the Chapter 5, four filters are applied in this chapter with the U.S data for the investigation of possible insider trading. Additionally, the day 0 hypotheses is tested again and with U.S data. Apart from this, a Granger causality is applied with the U.S targets and bidders to identify possible linkage with the insider traders.

Section 6.2 Data and Model

Section 6.2.1The sample and data collection

In this chapter, a sample of 100 stocks listed on the S&P is gathered in total for a five year period from 2006 to 2010. The sample contains 100 targets and 100 bidders. For each year, 20 targets and 20 bidders are included. The sample is chosen randomly from a large variety of industries. Tables 6.60-6.64 in the appendix show the names, announcement dates and industries of the 100 target firms and the 100 acquiring firms. The process of data collecting is the same with it is done in the precious chapter. The daily turnover is collected with Datastream. However, there are still some firms whose daily turnovers cannot be found. This might due to the imperfection of the database.

Table 6.1 Summary statistics for the sample of the turnovers of 85 target firms in U.S. acquisitions for the period 2006-2010

A. Number of firms by year	
2006	20
2007	15

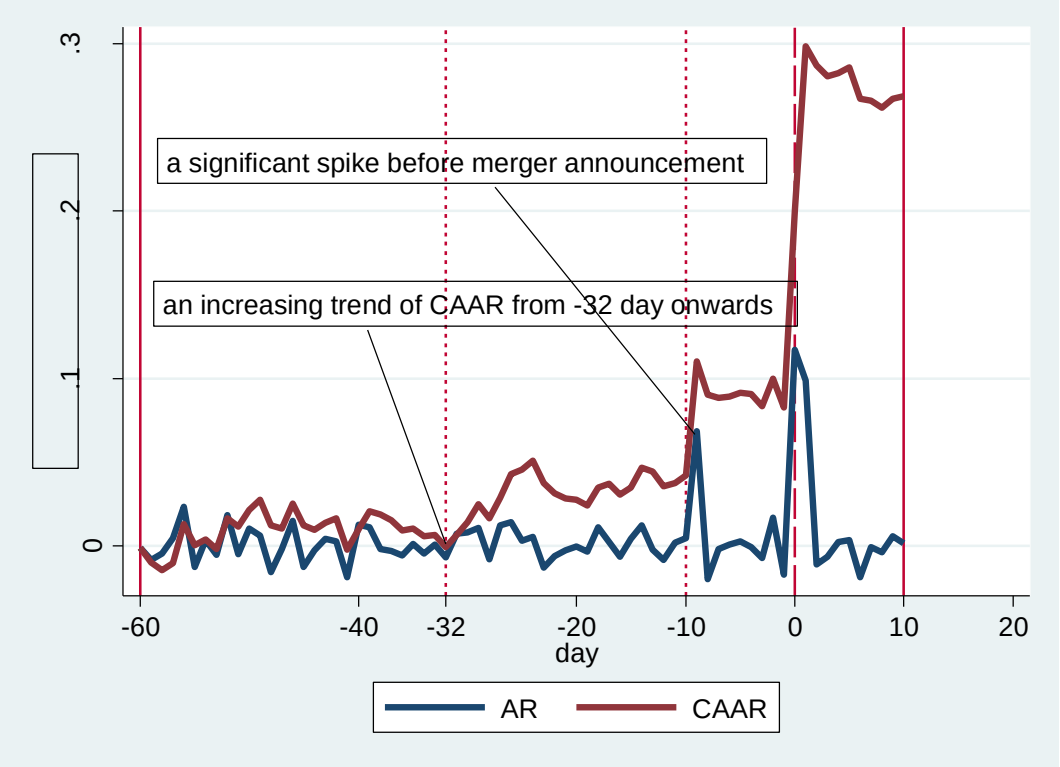
2008	20
2009	20
2010	20
Total	95

Source: Author's summary

Section 6.3 Empirical Results

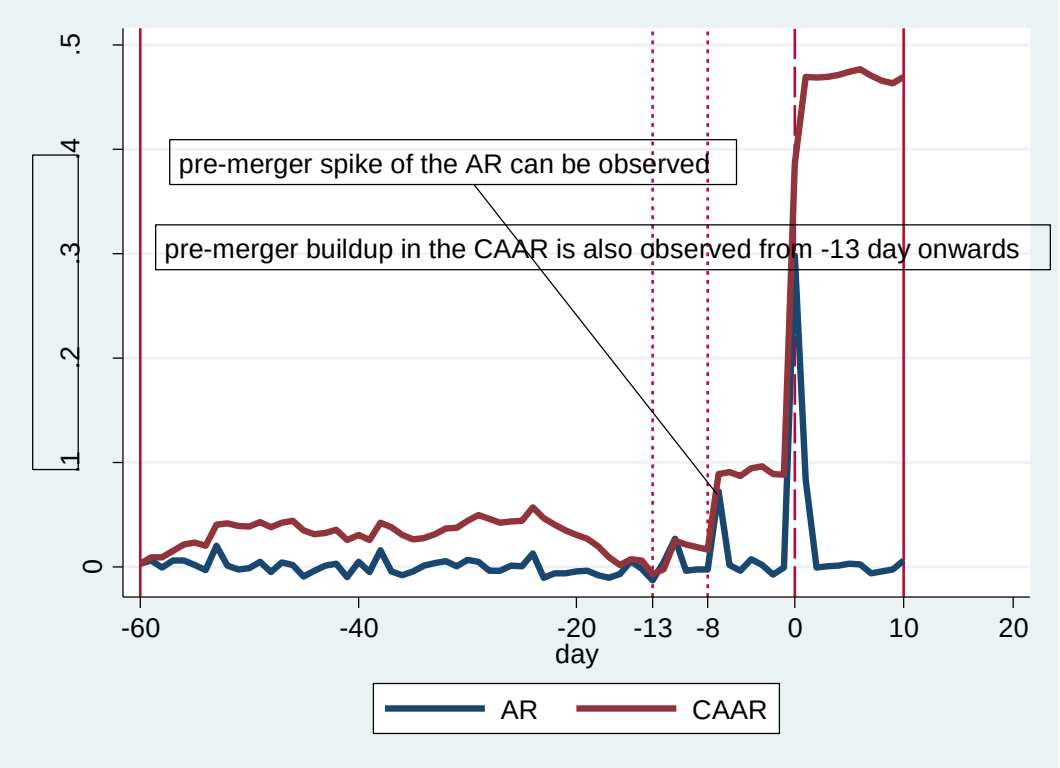
Section 6.3.1The analysis of AR and CAAR before the four-filter approach

Graph 6.1: the AR and CAAR relative to the announcement day in the U.S 2006



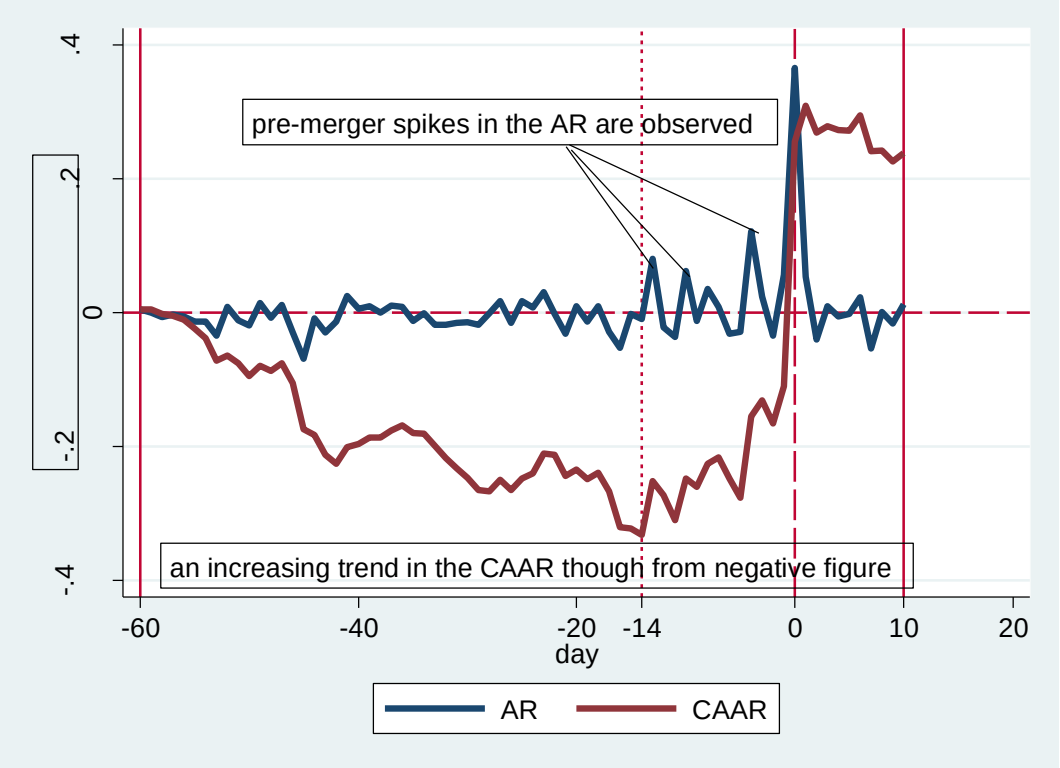
Graph 6.1 presents the AR and CAAR of the U.S firms in 2006 relative to the merger announcement. An increasing trend in the CAAR can be observed from day -32 onwards, though with some occasional dips. From -10 to -1 day, the CAAR is relatively stable. However, it increases dramatically on day -1. For the AR, a pronounced spike can be seen on day -10. As a result, there is possible existence of insider trading in the U.S 2006.

Graph 6.2: the AR and CAAR relative to the announcement day in the U.S 2007



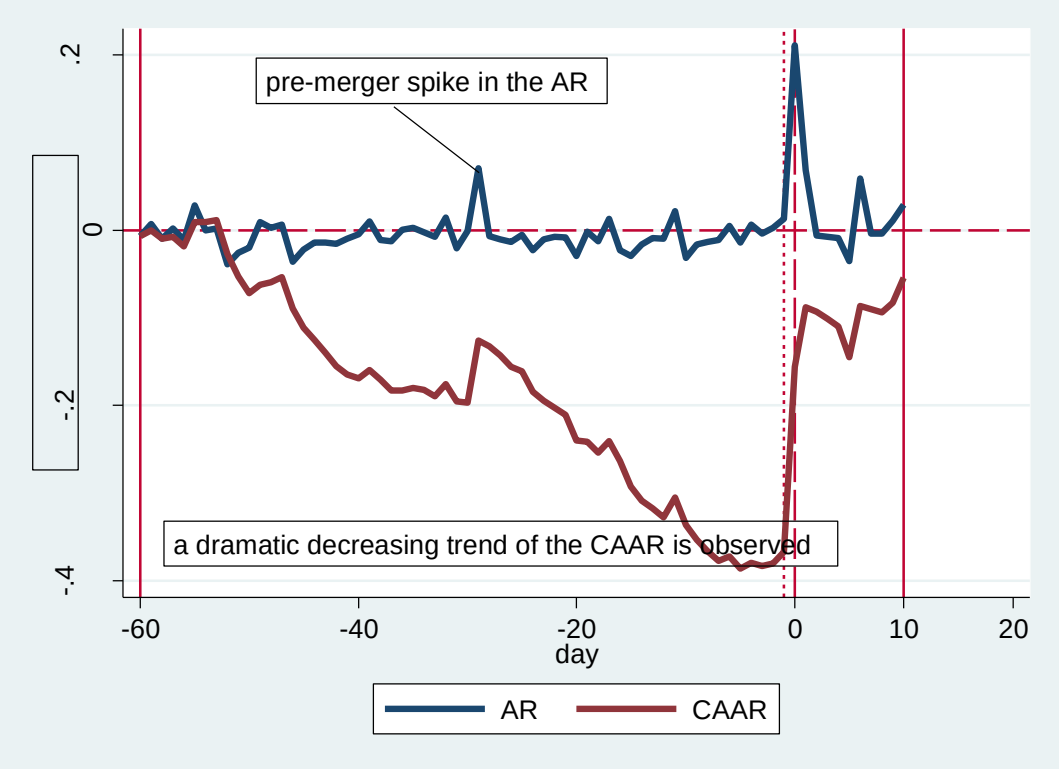
According to Graph 6.2, the increasing trend in CAAR is observed from day -13 onwards. From day -8 to day -1, the CAAR is relatively stable, and on day -1, it increases considerably. For the AR, it has spikes from day-13 onwards and the most significant one appears on day -8.

Graph 6.3: the AR and CAAR relative to the announcement day in the U.S 2008



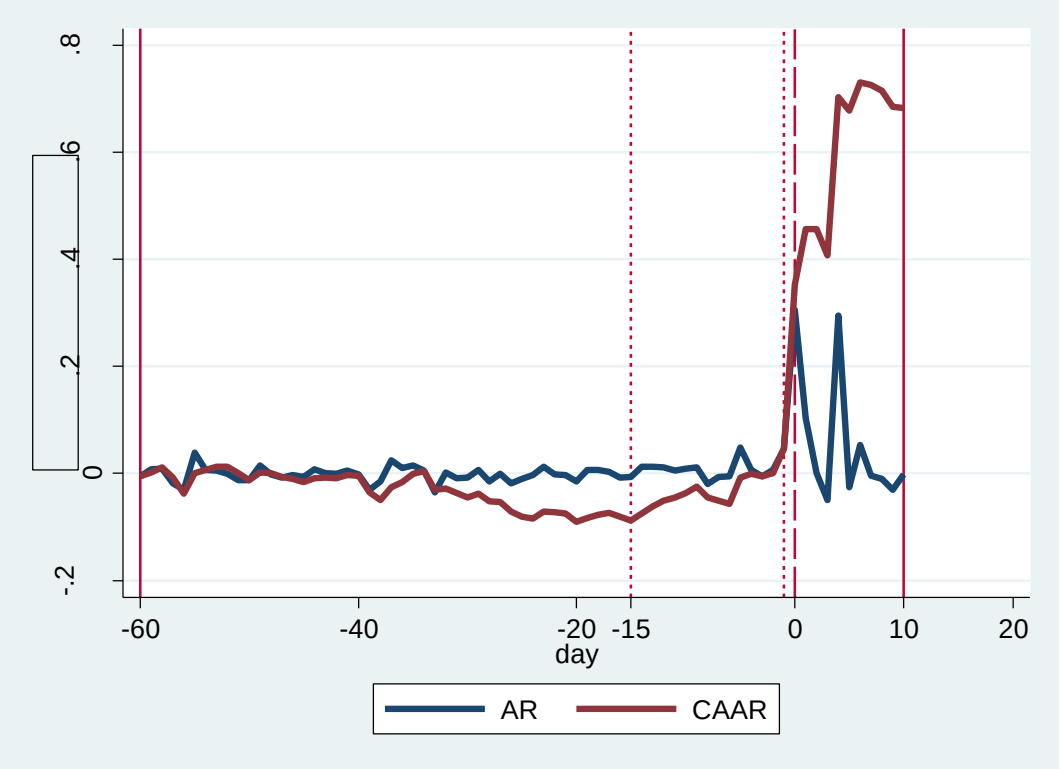
In 2008, the AR has several spikes from day -14 onwards and for the CAAR, it decreases sharply to almost -40% and starts to increase from day -14 onwards. As a result, although the CAAR starts with a very negative figure, from onwards -14, an increasing trend of buildup is observed. Therefore, in the year 2008, it is also suspected that there is insider trading taking place.

Graph 6.4: the AR and CAAR relative to the announcement day in the U.S 2009



In 2009, the AR has several spikes before merger announcement while the CAAR has a similar pattern as it is in 2008. The CAAR decreases sharply to -40% and starts to increase on day -1. The reason why in both 2008 and 2009, the CAARs decrease so dramatically might be the influence of the financial crisis which starts in the U.S and has a significant effect on the economy. One possibility is that more so than in other years, it affects the rationale for mergers, with potential buyers on the lookout for firms in trouble. When the stock market was on a downward trend, the CAAR of all the shares can also experience a sharp downward trend.

Graph 6.5: the AR and CAAR relative to the announcement day in the U.S 2010



Graph 6.5 is the AR and CAAR of the U.S in 2010 relative to the merger announcement. The AR does not have any significant spikes before merger announcement. However, for the CAAR, the increasing trend is observed on day -1. Consequently, it is suspected that there is possible insider trading in 2010. However, insider trading is also less of a problem than in other years.

Section 6.3.2The results of the first filter-the dummy variable approach for the targets

Tables 6.2-6.6 show results of the AR of the total, the suspected and the clean firms respectively and the CAAR of the total firms for the U.S from 2006 to 2010. The percent of daily residual positive of the total firms is also calculated. For the first filter, both positive and negative errors are taken into account because the insiders may deliberately leak negative information to drive the share price down before they intend to buy.

Table 6.2: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2006(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00137	0.006392	-0.00396	50%	-0.00137
-59	-0.00869	-0.00984	-0.00831	45%	-0.01007
-58	-0.00459	0.002039	-0.00681	30%	-0.01466
-57	0.004367	0.002421	0.005016	45%	-0.01029
-56	0.023221	0.012996	0.026629	60%	0.012926
-55	-0.01271	-0.00281	-0.01602	35%	0.000213
-54	0.003377	-0.00733	0.006945	50%	0.00359
-53	-0.00547	-0.00357	-0.0061	45%	-0.00188
-52	0.018319	0.00099	0.024096	55%	0.016444
-51	-0.00499	-0.00827	-0.0039	30%	0.011449
-50	0.01005	0.01013	0.010023	50%	0.021499
-49	0.006108	0.001204	0.007743	50%	0.027607
-48	-0.01567	0.01225	-0.02497	25%	0.011941
-47	-0.0019	0.010164	-0.00592	35%	0.010043
-46	0.014979	0.007871	0.017349	50%	0.025022
-45	-0.01275	-0.00342	-0.01586	40%	0.012275
-44	-0.00264	-0.01069	4.92E-05	30%	0.00964
-43	0.004152	0.007437	0.003057	35%	0.013792
-42	0.002448	-0.00926	0.006351	35%	0.01624
-41	-0.01878	-0.00678	-0.02279	35%	-0.00254
-40	0.012341	0.001986	0.015793	45%	0.009796
-39	0.010913	0.020489	0.007721	40%	0.020709
-38	-0.0022	0.004079	-0.00429	45%	0.018511
-37	-0.00334	0.00936	-0.00757	40%	0.015172
-36	-0.00595	0.024128	-0.01598	35%	0.009219
-35	0.00096	0.005826	-0.00066	50%	0.010179
-34	-0.00462	-0.00514	-0.00445	45%	0.005557
-33	0.000802	-0.00335	0.002185	40%	0.006358
-32	-0.0071	0.00089	-0.00976	25%	-0.00074
-31	0.00719	0.015718	0.004348	65%	0.006449
-30	0.007749	0.008526	0.00749	35%	0.014198
-29	0.010461	0.005041	0.012268	65%	0.024659
-28	-0.00828	-0.00041	-0.0109	40%	0.016384
-27	0.012176	0.012188	0.012172	35%	0.02856
-26	0.014178	0.000706	0.018668	45%	0.042737
-25	0.002843	0.011584	-7.1E-05	55%	0.04558
-24	0.005105	-0.01732	0.01258	40%	0.050685
-23	-0.01313	-0.00028	-0.01741	40%	0.037554
-22	-0.00639	0.009066	-0.01154	60%	0.031163
-21	-0.00298	-0.01755	0.001884	20%	0.028188
-20	-0.00067	0.005675	-0.00278	25%	0.02752

-19	-0.00343	0.016618	-0.01012	40%	0.024087
-18	0.010791	0.008432	0.011578	55%	0.034878
-17	0.00209	-0.00223	0.003531	40%	0.036968
-16	-0.00652	-0.0166	-0.00316	40%	0.030452
-15	0.004094	-0.00445	0.006941	50%	0.034547
-14	0.012106	0.010073	0.012784	55%	0.046653
-13	-0.00249	-0.0052	-0.00158	40%	0.044164
-12	-0.00873	0.004479	-0.01313	35%	0.035437
-11	0.001835	0.01181	-0.00149	35%	0.037272
-10	0.004574	0.002102	0.005398	55%	0.041845
-9	0.068341	0.004064	0.089767	60%	0.110187
-8	-0.01989	0.01386	-0.03113	40%	0.090301
-7	-0.00196	0.007243	-0.00503	45%	0.08834
-6	0.000602	0.001787	0.000207	55%	0.088942
-5	0.002609	0.007155	0.001094	40%	0.091551
-4	-0.0008	0.000424	-0.00121	40%	0.090751
-3	-0.00758	0.01145	-0.01392	30%	0.083175
-2	0.016747	-0.00269	0.023225	35%	0.099922
-1	-0.01735	0.011137	-0.02685	50%	0.082568
0	0.117206	0.020365	0.149487	70%	0.199775
1	0.098762	0.118091	0.092319	60%	0.298537
2	-0.01131	0.002351	-0.01586	45%	0.287227
3	-0.00658	0.001256	-0.0092	35%	0.280645
4	0.002075	0.006383	0.00064	45%	0.282721
5	0.003329	-0.00144	0.004918	55%	0.286049
6	-0.019	-0.00172	-0.02476	50%	0.267052
7	-0.00104	-0.00114	-0.00101	30%	0.266009
8	-0.00408	-0.00191	-0.0048	40%	0.261932
9	0.005453	0.002134	0.006559	55%	0.267384
10	0.001275	0.013077	-0.00266	45%	0.26866
Average from day -60 to -6	0.001617	0.00282	0.001216	-	0.024443
Average from day -60 to -5	0.001635	0.002898	0.001214	-	0.025642
Average from day -60 to -1	0.001376	0.003043	0.00082	-	0.029872
Average from day -60 to +1	0.004815	0.005178	0.004694	-	0.036946
Average from day -60 to +10	0.003784	0.004789	0.003449	-	0.067019

Table 6.3: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2007(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.003421	0.007651	0.000601	55%	0.003421
-59	0.00613	0.003242	0.008056	60%	0.009551
-58	-0.00043	-0.00833	0.004844	35%	0.009125
-57	0.006469	0.013526	0.001764	70%	0.015594
-56	0.006034	0.006491	0.00573	55%	0.021628
-55	0.001966	0.002738	0.001451	50%	0.023594
-54	-0.00321	-0.01558	0.005032	45%	0.020383
-53	0.020442	0.038523	0.008388	65%	0.040825
-52	0.001168	0.002495	0.000283	45%	0.041993
-51	-0.00236	-0.01079	0.003253	40%	0.03963
-50	-0.00104	-0.00483	0.001479	40%	0.038585
-49	0.004676	0.019917	-0.00548	35%	0.043261
-48	-0.00502	0.002687	-0.01016	50%	0.038239
-47	0.004171	-0.01223	0.015103	55%	0.04241
-46	0.001797	0.006696	-0.00147	55%	0.044207
-45	-0.00912	-0.02234	-0.00031	45%	0.035088
-44	-0.00359	-0.01535	0.00425	50%	0.031497
-43	0.001154	0.011384	-0.00567	40%	0.032651
-42	0.00329	-0.00207	0.006861	55%	0.035941
-41	-0.00997	-0.00535	-0.01305	55%	0.025969
-40	0.004662	0.019123	-0.00498	55%	0.030631
-39	-0.00456	-0.01176	0.000235	45%	0.026067
-38	0.016262	0.011003	0.019768	70%	0.042329
-37	-0.00399	0.000148	-0.00674	40%	0.038341
-36	-0.00766	0.012676	-0.02121	45%	0.030686
-35	-0.00441	-0.00228	-0.00584	65%	0.026272
-34	0.001283	0.00066	0.001698	55%	0.027554
-33	0.003718	0.004204	0.003394	55%	0.031272
-32	0.005855	0.010395	0.002828	70%	0.037126
-31	0.000661	-0.00494	0.004397	50%	0.037787
-30	0.006527	0.00114	0.010118	65%	0.044314
-29	0.005184	0.002664	0.006864	55%	0.049498
-28	-0.0036	-0.01108	0.001383	40%	0.045896
-27	-0.0034	-0.0033	-0.00347	45%	0.042495
-26	0.001134	-0.0029	0.003823	45%	0.043629
-25	0.00071	-0.01251	0.009523	55%	0.044339
-24	0.012683	0.014853	0.011235	50%	0.057022
-23	-0.01017	-0.00272	-0.01513	30%	0.046852
-22	-0.00622	-0.01347	-0.00138	40%	0.040633
-21	-0.00584	-0.00583	-0.00585	50%	0.034788
-20	-0.00394	0.004869	-0.00981	40%	0.030851

-19	-0.00373	-0.00216	-0.00477	50%	0.027124
-18	-0.00773	-0.00631	-0.00868	50%	0.019393
-17	-0.01023	-0.01548	-0.00673	55%	0.009164
-16	-0.00698	-0.02129	0.002562	65%	0.002186
-15	0.00542	0.021218	-0.00511	65%	0.007606
-14	-0.00172	-0.01733	0.008691	55%	0.005887
-13	-0.01256	-0.03005	-0.0009	30%	-0.00668
-12	0.00446	0.018	-0.00457	50%	-0.00222
-11	0.027293	0.053518	0.009809	65%	0.025077
-10	-0.00366	-0.01541	0.004178	65%	0.021421
-9	-0.00251	0.005755	-0.00803	50%	0.018907
-8	-0.00258	0.015535	-0.01466	35%	0.016326
-7	0.072584	0.189185	-0.00515	45%	0.08891
-6	0.001972	-2.17E-03	0.004735	50%	0.090882
-5	-0.00366	-0.00968	0.000345	50%	0.087218
-4	0.00732	0.009465	0.005889	60%	0.094537
-3	0.001764	0.010368	-0.00397	45%	0.096301
-2	-0.00733	0.005548	-0.01592	40%	0.088967
-1	-0.00067	-0.00485	0.002119	50%	0.088298
0	0.298159	0.059519	0.457252	80%	0.386457
1	0.083376	0.059471	0.099312	60%	0.469833
2	-0.00075	-0.00285	0.00065	65%	0.469084
3	0.000693	0.002729	-0.00066	45%	0.469777
4	0.001427	0.002697	0.00058	55%	0.471204
5	0.002972	0.0118	-0.00291	50%	0.474176
6	0.002592	0.003773	0.001805	60%	0.476768
7	-0.00629	-0.01528	-0.0003	40%	0.470476
8	-0.00436	-0.00552	-0.00358	50%	0.466119
9	-0.00253	-0.0092	0.001911	55%	0.463586
10	0.006135	0.013775	0.001042	50%	0.469721
Average from day -60 to -6	0.001653	0.004044	5.79E-05	-	0.031381
Average from day -60 to -5	0.001558	0.003799	6.31E-05	-	0.032378
Average from day -60 to -1	0.001472	0.003888	-0.00014	-	0.036355
Average from day -60 to +1	0.007578	0.005682	0.008842	-	0.048993
Average from day -60 to +10	0.006616	0.004989	0.007701	-	0.102373

Table 6.4: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2008(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.004391	0.012071	-0.00713	55%	0.004391
-59	0.000415	-0.00925	0.014918	25%	0.004806
-58	-0.0067	0.004503	-0.02349	40%	-0.00189
-57	-0.003	-0.00394	-1.60E-03	50%	-0.00489
-56	-0.00551	-0.00547	-0.00556	55%	-0.0104
-55	-0.01392	-0.01536	-0.01175	35%	-0.02432
-54	-0.01365	0.018201	-0.06143	30%	-0.03797
-53	-0.0342	-0.02943	-0.04136	40%	-0.07217
-52	0.008437	-0.0164	0.0457	55%	-0.06373
-51	-0.01188	-0.01815	-0.00248	55%	-0.07561
-50	-0.0188	-0.02547	-0.00881	40%	-0.09442
-49	0.014554	0.034265	-0.01501	45%	-0.07986
-48	-0.00766	-0.03386	0.031645	50%	-0.08752
-47	0.01168	0.03705	-0.02638	70%	-0.07584
-46	-0.03	-0.02043	-0.04435	25%	-0.10584
-45	-0.06887	-0.02411	-0.136	40%	-0.17471
-44	-0.00853	-0.01671	0.003749	30%	-0.18323
-43	-0.02981	-0.03738	-0.01846	30%	-0.21304
-42	-0.01338	-0.02017	-0.0032	45%	-0.22643
-41	0.02484	0.020804	0.030893	35%	-0.20159
-40	0.005548	0.003714	0.008297	55%	-0.19604
-39	0.009504	0.02059	-0.00712	40%	-0.18654
-38	-0.00022	-0.00938	0.013523	55%	-0.18676
-37	0.010429	0.008422	0.013439	45%	-0.17633
-36	0.008094	-0.00156	0.022576	60%	-0.16823
-35	-0.01201	-0.01486	-0.00774	50%	-0.18025
-34	-0.00081	0.006627	-0.01198	50%	-0.18106
-33	-0.01823	-0.033	0.003923	40%	-0.19929
-32	-0.01835	-0.01925	-0.017	50%	-0.21764
-31	-0.01559	-0.02054	-0.00816	40%	-0.23323
-30	-0.01435	-0.02339	-0.00078	40%	-0.24758
-29	-0.01802	-0.02896	-0.00161	50%	-0.2656
-28	-0.00141	0.022233	-0.03686	45%	-0.26701
-27	0.01694	0.021403	0.010246	50%	-0.25007
-26	-0.01565	-0.02108	-0.0075	35%	-0.26571
-25	0.017416	-0.0113	0.060498	40%	-0.2483
-24	0.007513	0.027555	-0.02255	65%	-0.24078
-23	0.030359	0.01891	0.047533	45%	-0.21042
-22	-0.0024	0.047892	-0.07784	45%	-0.21282
-21	-0.0317	-0.0654	0.018856	50%	-0.24452
-20	0.00949	0.027098	-0.01692	55%	-0.23503

-19	-0.01387	-0.04544	0.033494	65%	-0.2489
-18	0.009728	0.017436	-0.00183	50%	-0.23917
-17	-0.02829	-0.05886	0.017574	55%	-0.26746
-16	-0.05315	-0.02054	-0.10208	30%	-0.32062
-15	-0.00236	-0.01729	0.020026	45%	-0.32298
-14	-0.00925	0.013658	-0.04362	40%	-0.33223
-13	0.080442	0.062199	0.107805	40%	-0.25179
-12	-0.02165	-0.03346	-0.00394	40%	-0.27344
-11	-0.03648	-0.02502	-0.05366	55%	-0.30992
-10	0.062035	0.002689	0.151054	55%	-0.24789
-9	-0.01286	-0.01429	-0.01071	60%	-0.26074
-8	0.035136	0.07473	-0.02426	50%	-0.22561
-7	0.008779	0.017627	-0.00449	50%	-0.21683
-6	-0.03143	-0.05196	-0.00063	35%	-0.24826
-5	-0.02829	0.015061	-0.09331	55%	-0.27654
-4	0.121516	0.123008	0.119278	50%	-0.15503
-3	0.02378	0.026654	0.019469	60%	-0.13125
-2	-0.03476	-0.02375	-0.05127	50%	-0.16601
-1	0.056055	0.093039	0.000579	65%	-0.10995
0	0.365763	0.122998	0.729912	90%	0.255811
1	0.053978	0.070121	0.029764	55%	0.30979
2	-0.04056	-0.00818	-0.08914	45%	0.269226
3	0.00964	-0.00545	0.032281	35%	0.278866
4	-0.00561	0.009418	-0.02816	20%	0.273254
5	-0.00158	0.005447	-0.01212	40%	0.271673
6	0.022878	0.020268	0.026792	50%	0.294551
7	-0.0536	-0.04624	-0.06465	45%	0.240949
8	0.001219	-0.00825	0.015425	50%	0.242167
9	-0.01597	-0.01692	-0.01456	35%	0.226195
10	0.012709	0.01903	0.003228	45%	0.238904
Average from day -60 to -6	-0.00451	-0.00495	-0.00386	-	-0.1837
Average from day -60 to -5	-0.00494	-0.00459	-0.00546	-	-0.18535
Average from day -60 to -1	-0.00183	-0.00063	-0.00363	-	-0.18237
Average from day -60 to +1	0.004996	0.002505	0.00874	-	-0.16736
Average from day -60 to +10	0.003365	0.00175	0.005788	-	-0.11325

Table 6.5: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2009(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.007	-0.01584	-0.0048	45%	-0.007
-59	0.007184	0.012037	0.005971	60%	0.000179
-58	-0.0098	-0.0411	-0.00197	30%	-0.00962
-57	0.001918	-0.02458	0.008543	55%	-0.0077
-56	-0.01093	-0.01898	-0.00892	45%	-0.01863
-55	0.028237	0.163154	-0.00549	40%	0.009605
-54	-6.9E-05	-0.01109	0.002686	45%	0.009535
-53	0.002306	-0.0032	0.003683	45%	0.011841
-52	-0.03875	-0.22246	0.007179	30%	-0.02691
-51	-0.0255	-0.03227	-0.02381	25%	-0.05241
-50	-0.01957	-0.06716	-0.00767	40%	-0.07198
-49	0.009581	0.052542	-0.00116	55%	-0.0624
-48	0.002863	-0.01455	0.007216	45%	-0.05954
-47	0.006354	0.005442	0.006582	50%	-0.05319
-46	-0.03613	-0.13141	-0.01231	15%	-0.08931
-45	-0.02177	-0.08666	-0.00555	45%	-0.11109
-44	-0.01417	-0.00977	-0.01527	40%	-0.12526
-43	-0.01433	-0.04137	-0.00757	35%	-0.13958
-42	-0.01547	-0.03452	-0.01071	35%	-0.15505
-41	-0.0099	-0.01638	-0.00827	25%	-0.16495
-40	-0.00435	-0.0013	-0.00512	60%	-0.1693
-39	0.009921	0.010086	0.00988	55%	-0.15938
-38	-0.01108	-0.06917	0.003446	50%	-0.17046
-37	-0.01261	-0.01137	-0.01291	40%	-0.18306
-36	0.000366	0.026938	-0.00628	35%	-0.1827
-35	0.002467	-0.03971	0.013011	50%	-0.18023
-34	-0.00222	-0.00581	-0.00132	35%	-0.18245
-33	-0.00711	-0.00743	-0.00703	30%	-0.18956
-32	0.014239	0.055889	0.003826	40%	-0.17532
-31	-0.02035	-0.07139	-0.0076	35%	-0.19567
-30	-0.00096	-0.02627	0.005372	45%	-0.19663
-29	0.070955	0.408872	-0.01352	30%	-0.12567
-28	-0.0066	-0.03289	-2.5E-05	30%	-0.13227
-27	-0.0105	-0.03398	-0.00462	35%	-0.14277
-26	-0.01309	-0.02441	-0.01026	25%	-0.15586
-25	-0.00554	-0.04696	0.004811	50%	-0.1614
-24	-0.02279	-0.09918	-0.0037	30%	-0.18419
-23	-0.01064	0.000986	-0.01355	35%	-0.19484
-22	-0.00772	-0.02176	-0.00421	30%	-0.20256
-21	-0.00811	-0.02706	-0.00337	45%	-0.21066
-20	-0.02938	-0.09798	-0.01223	40%	-0.24004

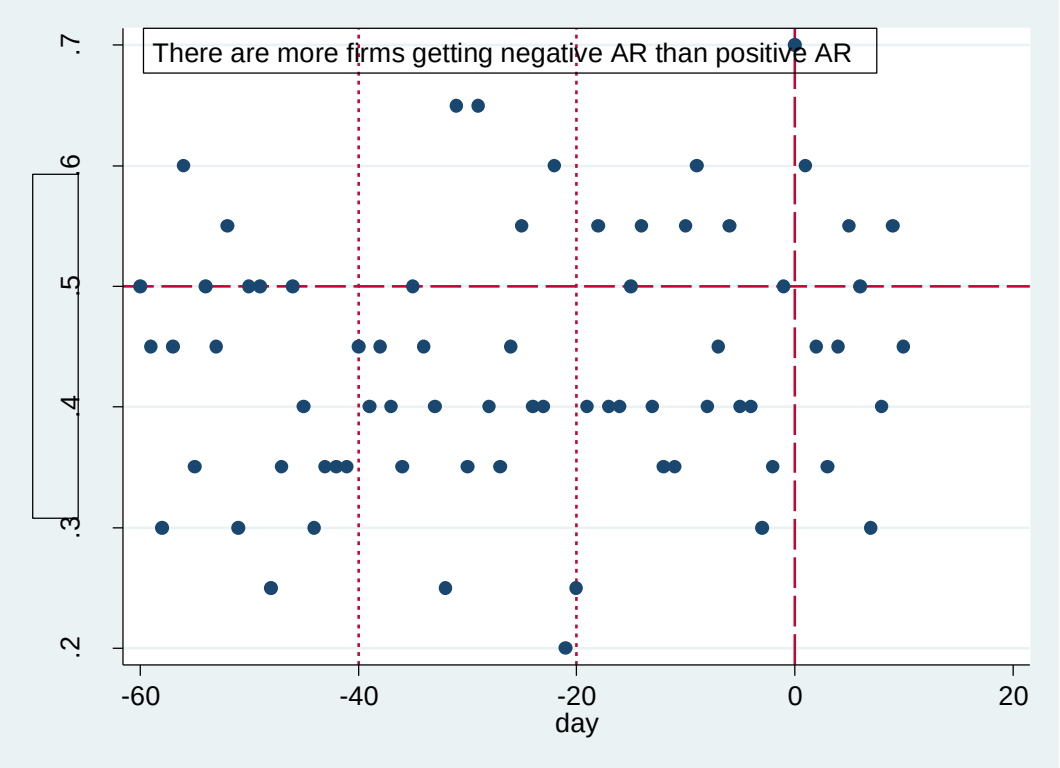
-19	-0.00178	-0.02467	0.003938	40%	-0.24183
-18	-0.01238	-0.00479	-0.01427	40%	-0.2542
-17	0.013366	0.059138	0.001922	65%	-0.24084
-16	-0.0229	-0.03173	-0.02069	30%	-0.26374
-15	-0.02902	-0.06497	-0.02003	20%	-0.29275
-14	-0.01643	-0.13565	0.013382	40%	-0.30918
-13	-0.00879	-0.00957	-0.00859	25%	-0.31797
-12	-0.00966	-0.01471	-0.0084	25%	-0.32763
-11	0.022154	0.12538	-0.00365	35%	-0.30548
-10	-0.03144	-0.10679	-0.01261	30%	-0.33692
-9	-0.01638	-0.05385	-0.00702	40%	-0.3533
-8	-0.01315	-0.08027	0.003636	45%	-0.36645
-7	-0.01135	-0.0103	-0.01161	30%	-0.3778
-6	0.005113	0.031912	-0.00159	40%	-0.37269
-5	-0.01402	-0.05121	-0.00473	45%	-0.38671
-4	0.006515	0.015234	0.004335	45%	-0.38019
-3	-0.00341	-0.01411	-0.00074	40%	-0.38361
-2	0.003138	-0.0007	0.004098	45%	-0.38047
-1	0.013181	0.069067	-0.00079	45%	-0.36729
0	0.211081	0.222696	0.208177	80%	-0.15621
1	0.068667	-0.01647	0.089951	50%	-0.08754
2	-0.00581	-0.00161	-0.00686	40%	-0.09335
3	-0.00772	-0.01882	-0.00495	40%	-0.10107
4	-0.00872	-0.01216	-0.00785	25%	-0.10979
5	-0.03541	-0.13903	-0.00951	25%	-0.1452
6	0.058968	0.238955	0.013972	45%	-0.08623
7	-0.00408	-0.01627	-0.00104	35%	-0.09031
8	-0.00367	-0.00704	-0.00283	35%	-0.09398
9	0.010993	0.092959	-0.0095	30%	-0.08299
10	0.028924	0.165862	-0.00531	50%	-0.05407
Average from day -60 to -6	-0.00678	-0.01769	-0.00405	-	-0.16762
Average from day -60 to -5	-0.00691	-0.01829	-0.00406	-	-0.17154
Average from day -60 to -1	-0.00612	-0.01591	-0.00367	-	-0.18529
Average from day -60 to +1	-0.00141	-0.01207	0.001253	-	-0.18325
Average from day -60 to +10	-0.00076	-0.00628	0.000617	-	-0.17209

Table 6.6: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2010(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00566	-0.02475	0.002528	40%	-0.00566
-59	0.007942	0.025035	0.000617	65%	0.002287
-58	0.008704	-0.00688	0.015383	35%	0.01099
-57	-0.01837	0.001447	-0.02687	55%	-0.00738
-56	-0.03084	-0.00133	-0.04349	55%	-0.03822
-55	0.038627	-0.0084	0.05878	35%	0.000404
-54	0.006797	-0.01829	0.017548	50%	0.007201
-53	0.005985	-0.0026	0.009663	55%	0.013186
-52	-4.1E-05	-0.004	0.001657	65%	0.013144
-51	-0.01302	-0.02066	-0.00975	25%	0.000124
-50	-0.01245	0.000653	-0.01807	40%	-0.01233
-49	0.01463	0.005377	0.018595	65%	0.002301
-48	-0.0016	-0.01876	0.005749	45%	0.000698
-47	-0.0072	-0.00217	-0.00935	40%	-0.0065
-46	-0.0031	-0.01548	0.002207	60%	-0.0096
-45	-0.00653	-0.01304	-0.00374	45%	-0.01613
-44	0.007709	0.011462	0.0061	50%	-0.00842
-43	0.000361	5.16E-03	-0.0017	50%	-0.00806
-42	-0.00071	0.01383	-0.00694	40%	-0.00876
-41	0.005975	0.019035	0.000377	60%	-0.00279
-40	-0.00173	-0.00636	0.000259	50%	-0.00452
-39	-0.03085	-0.02205	-0.03462	30%	-0.03537
-38	-0.01475	0.004247	-0.0229	55%	-0.05012
-37	0.024484	0.032229	0.021165	60%	-0.02564
-36	0.009733	0.023319	0.003911	70%	-0.0159
-35	0.01516	0.038247	0.005266	50%	-0.00074
-34	0.005425	0.010853	0.003099	45%	0.004682
-33	-0.0348	-0.07693	-0.01674	20%	-0.03011
-32	0.002415	-0.0027	0.004608	40%	-0.0277
-31	-0.00845	-0.00643	-0.00932	25%	-0.03615
-30	-0.00821	-0.01373	-0.00584	45%	-0.04436
-29	0.006827	0.026262	-0.0015	45%	-0.03753
-28	-0.01493	-0.01681	-0.01412	60%	-0.05246
-27	-0.00068	-0.01192	0.004138	40%	-0.05314
-26	-0.01815	0.029419	-0.03854	55%	-0.07129
-25	-0.00988	-0.01937	-0.00582	40%	-0.08117
-24	-0.00287	0.005782	-0.00657	50%	-0.08404
-23	0.012905	0.032789	0.004383	60%	-0.07114
-22	-0.00133	-0.01512	0.004576	50%	-0.07247
-21	-0.00243	0.021025	-0.01248	35%	-0.0749
-20	-0.01488	-0.01214	-0.01605	40%	-0.08977

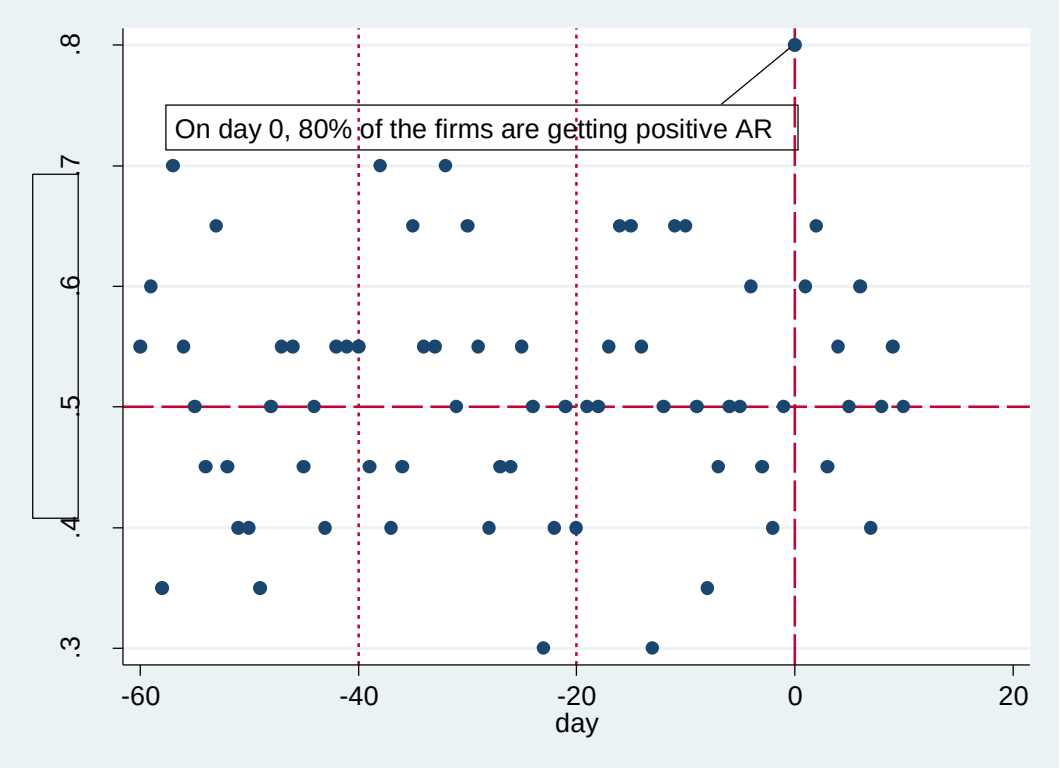
-19	0.006434	0.05562	-0.01465	65%	-0.08334
-18	0.006607	0.017477	0.001948	45%	-0.07673
-17	0.003388	-0.00947	0.008898	70%	-0.07334
-16	-0.00788	-0.02559	-0.00029	45%	-0.08123
-15	-0.00637	-0.02697	0.002455	50%	-0.0876
-14	0.012994	0.010447	0.014086	55%	-0.07461
-13	0.012409	0.008504	0.014082	65%	-0.0622
-12	0.011205	0.053232	-0.00681	35%	-0.05099
-11	0.005626	0.025038	-0.00269	55%	-0.04537
-10	0.008737	-0.00231	0.01347	60%	-0.03663
-9	0.011613	0.046662	-0.00341	45%	-0.02502
-8	-0.01996	-0.03784	-0.01229	20%	-0.04497
-7	-0.00612	0.003547	-0.01026	45%	-0.05109
-6	-0.00519	-0.02392	0.00284	50%	-0.05628
-5	0.049049	0.004233	0.068255	60%	-0.00723
-4	0.006462	0.013594	0.003406	65%	-0.00076
-3	-0.00516	7.62E-05	-0.00741	45%	-0.00593
-2	0.006334	0.027384	-0.00269	55%	0.000408
-1	0.046271	0.122036	0.013801	80%	0.04668
0	0.306246	0.180102	0.360308	95%	0.352926
1	0.103927	0.031537	0.134951	55%	0.456852
2	0.000507	0.005471	-0.00162	50%	0.45736
3	-0.04977	-0.00854	-0.06743	30%	0.407594
4	0.295708	-0.00656	0.425252	40%	0.703302
5	-0.02559	0.002904	-0.03781	45%	0.677709
6	0.053086	0.002101	0.074937	50%	0.730795
7	-0.00467	0.001202	-0.00719	50%	0.726125
8	-0.01061	-0.002	-0.0143	30%	0.715518
9	-0.03013	-0.00706	-0.04002	50%	0.685384
10	-0.00218	0.001712	-0.00384	40%	0.683208
Average from day -60 to -6	-0.00102	0.001103	-0.00193	-	-0.03412
Average from day -60 to -5	-0.00013	0.001159	-0.00068	-	-0.03364
Average from day -60 to -1	0.000778	0.0038	-0.00052	-	-0.03073
Average from day -60 to +1	0.007368	0.007091	0.007487	-	-0.01667
Average from day -60 to +10	0.009622	0.00604	0.011157	-	0.066946

Graph 6.6: The % of firms with positive AR in the U.S 2006



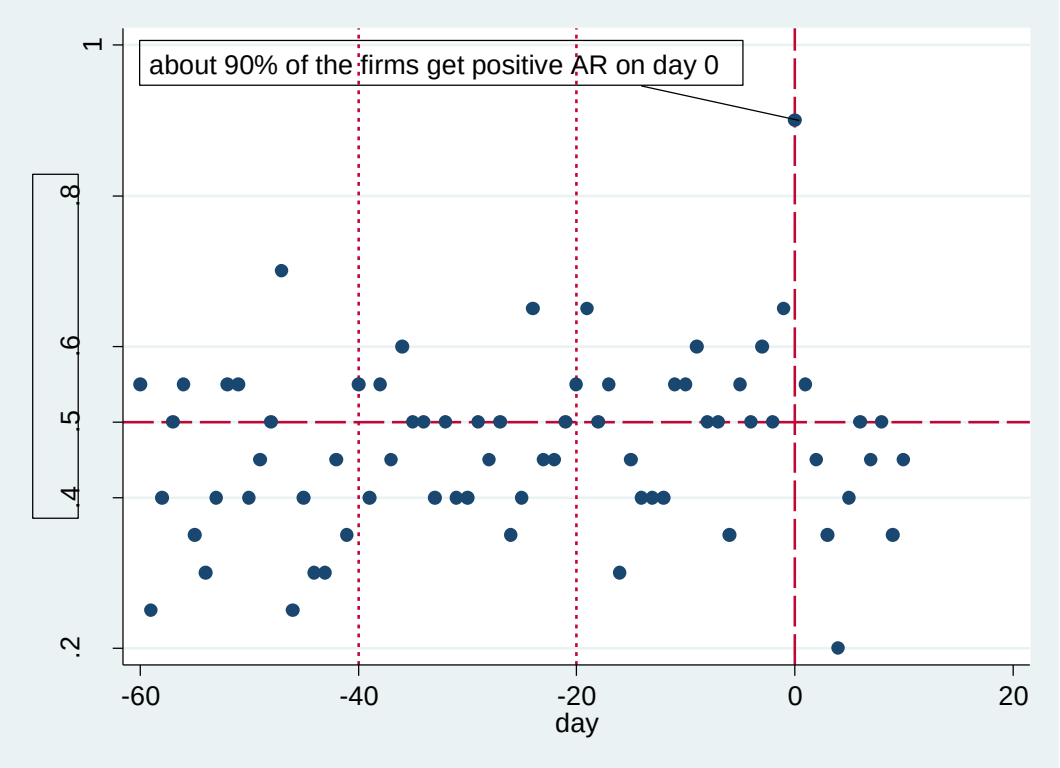
According to Graph 6.6, there are more firms getting negative AR than the firms getting positive AR all through the event window because the firms below 50% are much more than those above 50%. The highest percentages appear during a period from -40 to -20. On those two days, more than 65% of the total firms are experiencing positive AR.

Graph 6.7: The % of firms with positive AR in the U.S 2007



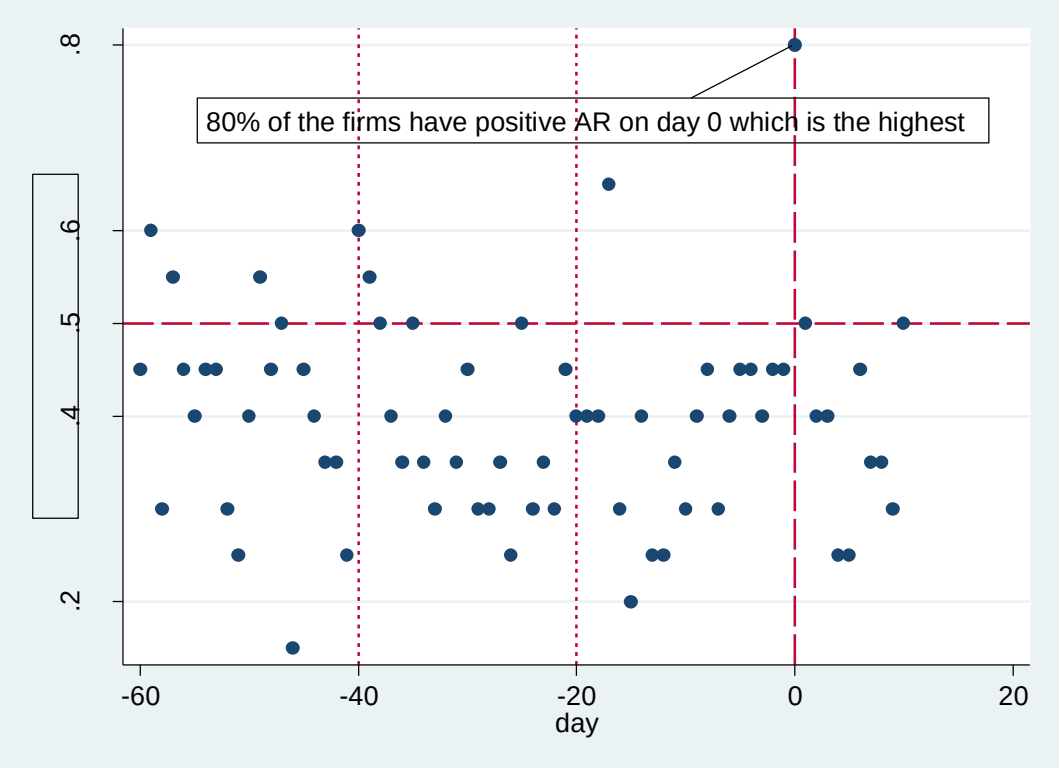
In 2007, the highest percentage appears on day 0 on which day 80% of the firms are experiencing positive AR. Apart from this, during a period from day -60 to -30, the percentages of the firms with positive AR peak three times on 70%.

Graph 6.8: The % of firms with positive AR in the U.S 2008



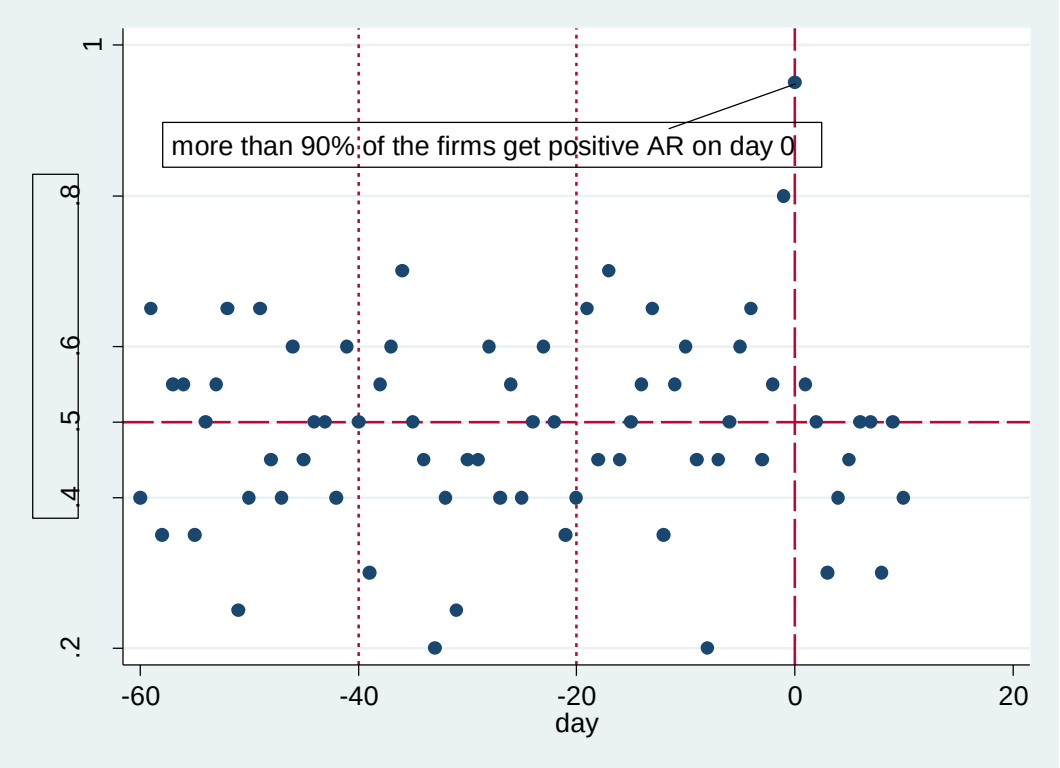
Graph 6.8 is the percentage of firms with positive AR relative to the announcement day in the U.S 2008. Similar with the previous years, the highest percentage rises on day 0 on which about 90% of the total firms are getting positive AR. Apart from the high percentage on day 0, it is also noticeable that before the merger announcement, there are more firms having negative AR than those having positive AR.

Graph 6.9: The % of firms with positive AR in the U.S 2009



According to Graph 6.9, there are much more firms getting negative AR than those getting positive AR. The highest percentage appears on day 0 which indicates that 80% of the total firms get positive AR on this day. When comparing with the U.K in 2008 and 2009, there are much fewer firms getting positive ARs in the crisis period.

Graph 6.10: The % of firms with positive AR in the U.S 2010



According to Graph 6.6-6.9, the highest percentages of firms with positive AR appear on day 0 for all the five years. The lowest is 2006 in which year 70% firms get positive AR on day 0 and the highest two are in 2008 and 2010 in which years 90% firms can get positive AR on the merger announcement day.

Table 6.7 gives the categorization after the dummy variable approach. All the firms are grouped as 'clean' or 'suspected' depending on whether they have significant daily dummy variables or not.

Table 6.7: The codes of the clean and suspected target firms after the dummy variable approach in the U.S from 2006 to 2010

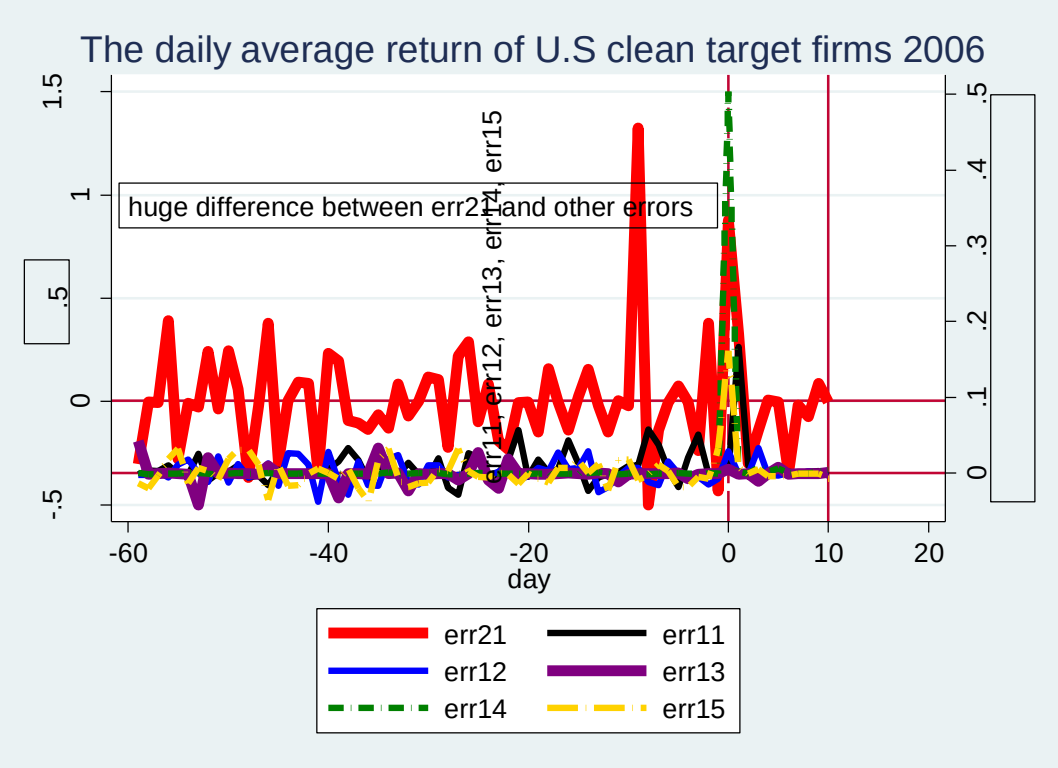
2006			
The code of the clean firms			The code of the suspected firms
UST0601	UST0608	UST0615	UST0602
UST0603	UST0609	UST0616	UST0607
UST0604	UST0610	UST0618	UST0611
UST0605	UST0612	UST0619	UST0614
UST0606	UST0613	UST0620	UST0617
2007			
The code of the clean firms			The code of the suspected firms

UST0701	UST0708	UST0720		UST0706	UST0717	
UST0702	UST0709			UST0711	UST0718	
UST0703	UST0710			UST0713	UST0719	
UST0704	UST0712			UST0714		
UST0705	UST0716			UST0715		
2008						
The code of the clean firms				The code of the suspected firms		
UST0801	UST0814			UST0802	UST0809	UST0818
UST0804	UST0817			UST0803	UST0811	UST0819
UST0808	UST0820			UST0805	UST0813	
UST0810				UST0806	UST0815	
UST0812				UST0807	UST0816	
2009						
The code of the clean firms				The code of the suspected firms		
UST0901	UST0909	UST0915	UST0920	UST0903		
UST0902	UST0910	UST0916		UST0905		
UST0904	UST0912	UST0917		UST0906		
UST0907	UST0913	UST0918		UST0911		
UST0908	UST0914	UST0919				
2010						
The code of the clean firms				The code of the suspected firms		
UST1002	UST1009	UST1015		UST1001	UST1019	
UST1003	UST1010	UST1017		UST1004		
UST1005	UST1011	UST1018		UST1007		
UST1006	UST1012	UST1020		UST1014		
UST1008	UST1013			UST1016		

Figure 6.1 The daily average return of the U.S target firms 2006

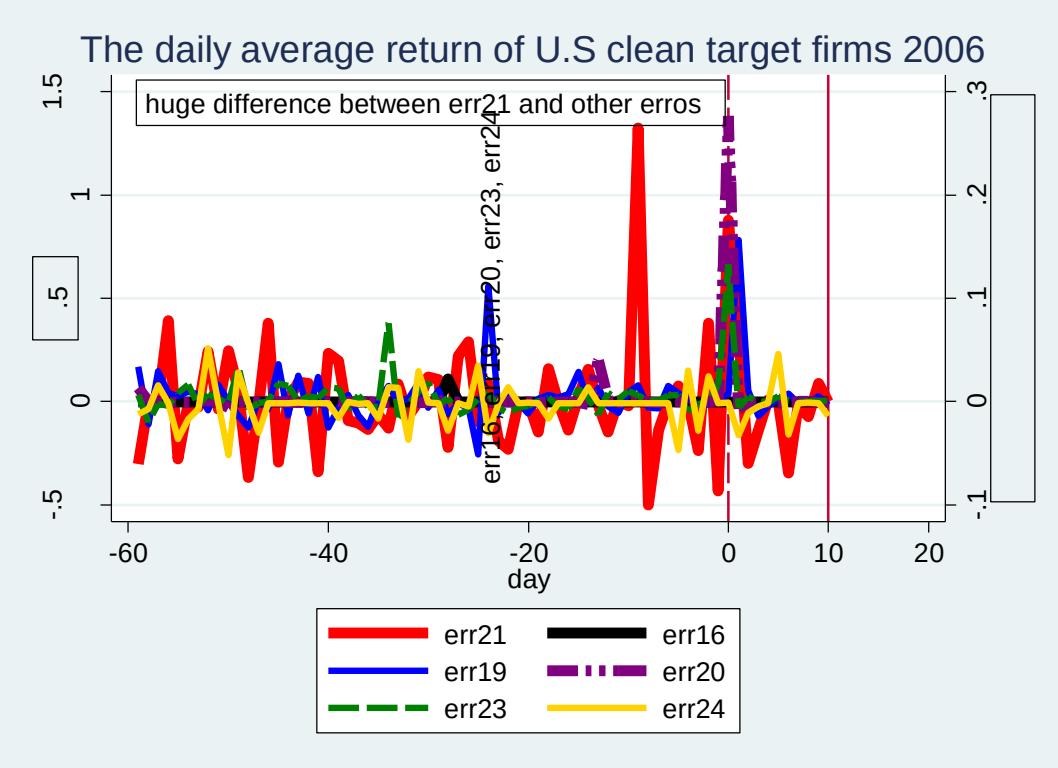
According to Figure 6.1, the AR of the suspected firms is more stable than that of the clean firms which is odd. The AR of the clean firms keeps fluctuating before -10 day. From day -10 onwards, there is a sharp increase in the AR of the clean firms. However, on day 0, the AR of the clean firms is higher than that of the suspected firms. The following Graph 6.11 is presented on which ten 'clean' firms suggested by the first filter in the U.S in 2006 are all included.

Graph 6.11(a)[29]

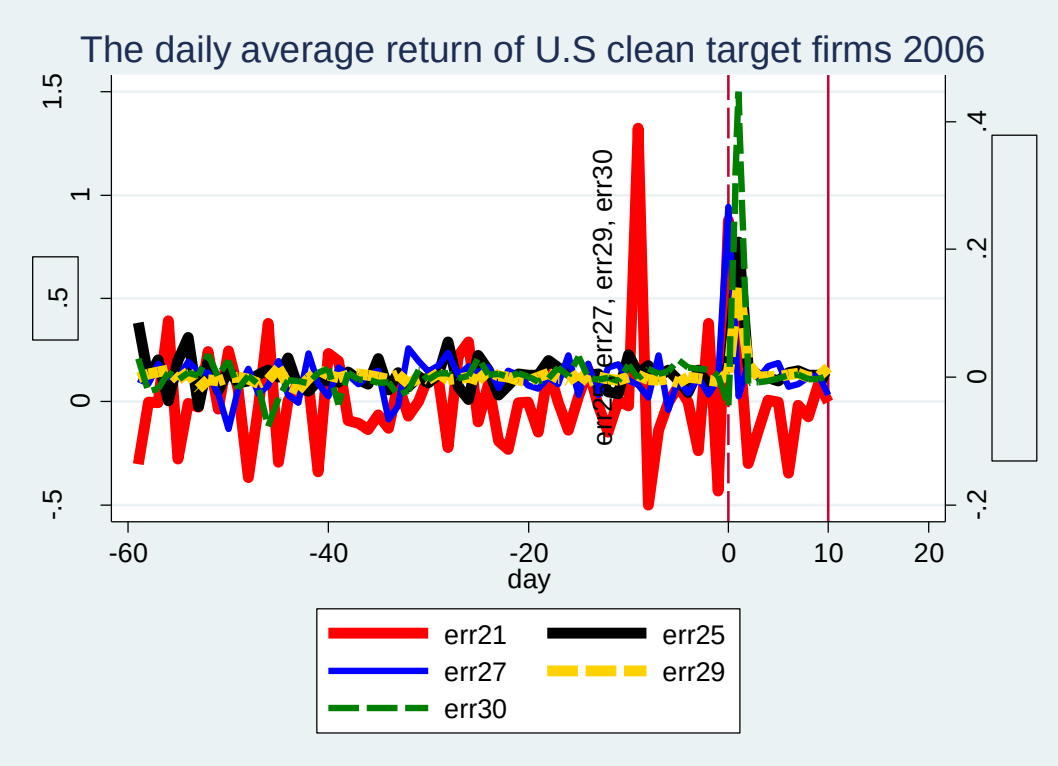


[29] In 2006, there are 15 clean firms according to the first filter and therefore, three Graphs, Graph 6.11(a) Graph 6.11(b) and Graph 6.11(c) are presented to show the difference between error21 and other errors clearly.

Graph 6.11(b)

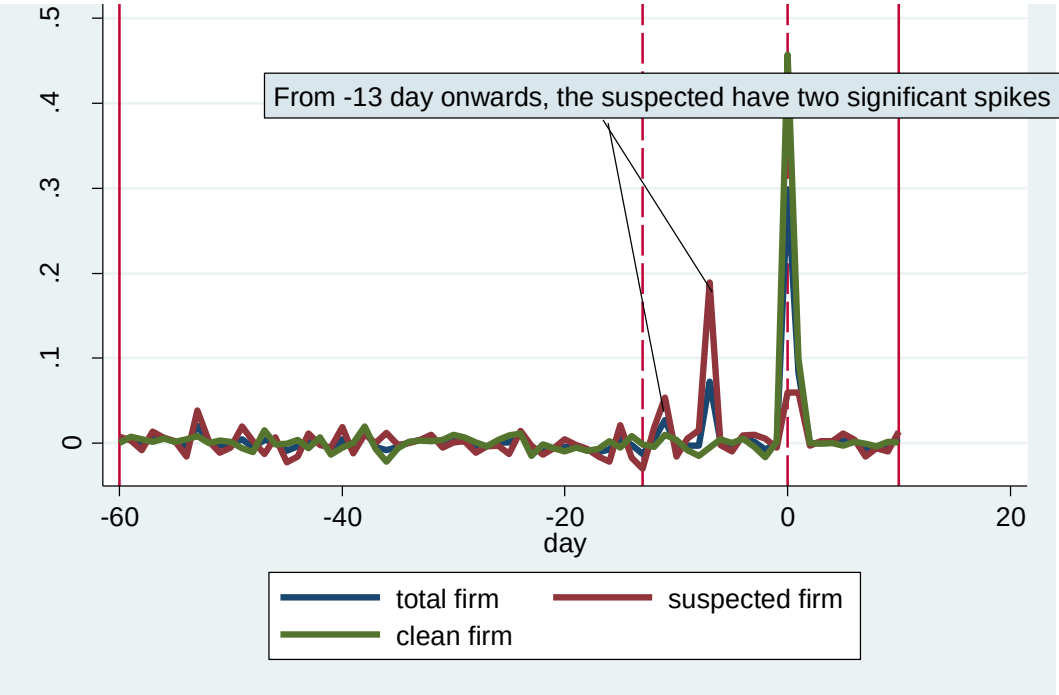


Graph 6.11(c)



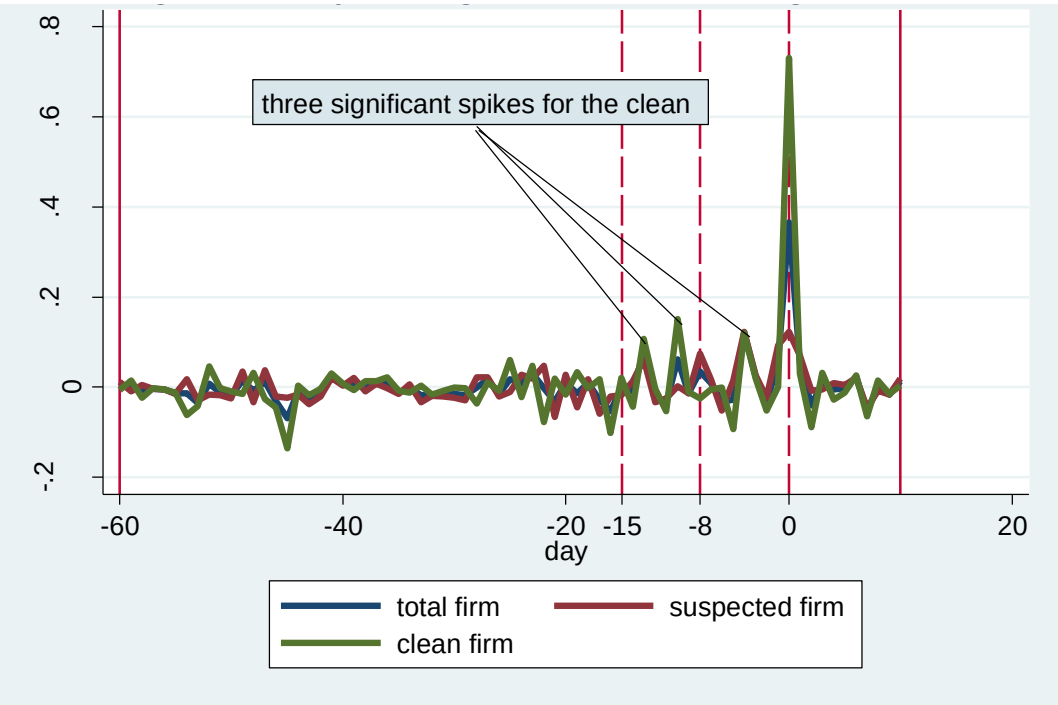
According to Graph 6.11(a) Graph 6.11(b) and Graph 6.11(c), the err21 has a comparatively similar pattern with that of the clean firms in Figure 6.1 and this can explain the spikes of the clean firms. From day -60 to day -40, the AR of err21 is fluctuating and on day -9, it has a high spike which is of the same pattern with the AR of the clean firms in Figure 6.1. The only difference is that the spike of the clean firms in Figure 6.1 is lower and the reason could be that the high spike is driven down by the other clean firms. When referred back, the err21 is Firm UST0605. In Filter 2-the news search, public released rumours will be searched to elucidate more information on these firms.

Figure 6.2 The daily average return of the U.S target firms 2007

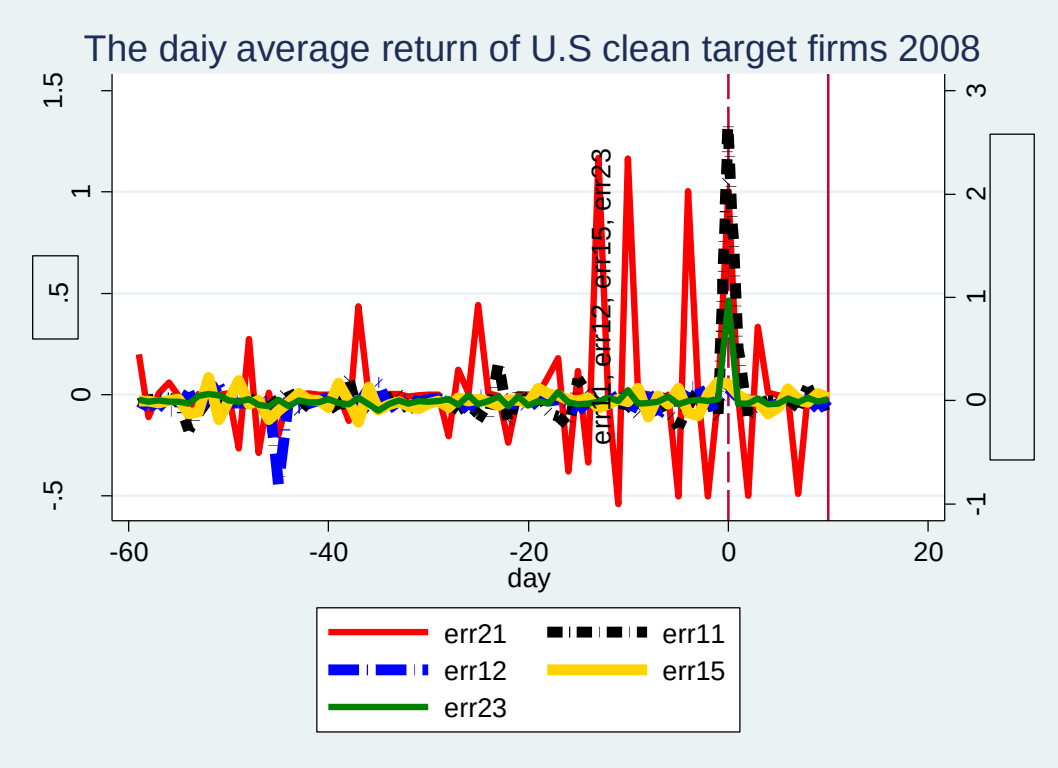


According to Figure 6.2, the AR of the clean firms is stable all through the event window and the AR of the suspected firms is stable before day -20. A significant spike in the AR of the suspected firms is observed on day -10. Moreover, on day 0, the suspected firms are getting a much lower AR than the clean firms. This can be an evidence of the suspected firms absorbing the abnormal returns before the announcement day and therefore, on the announcement day, the ARs for them are much lower and this will be explained in details in the latter part concerning the day 0 hypothesis.

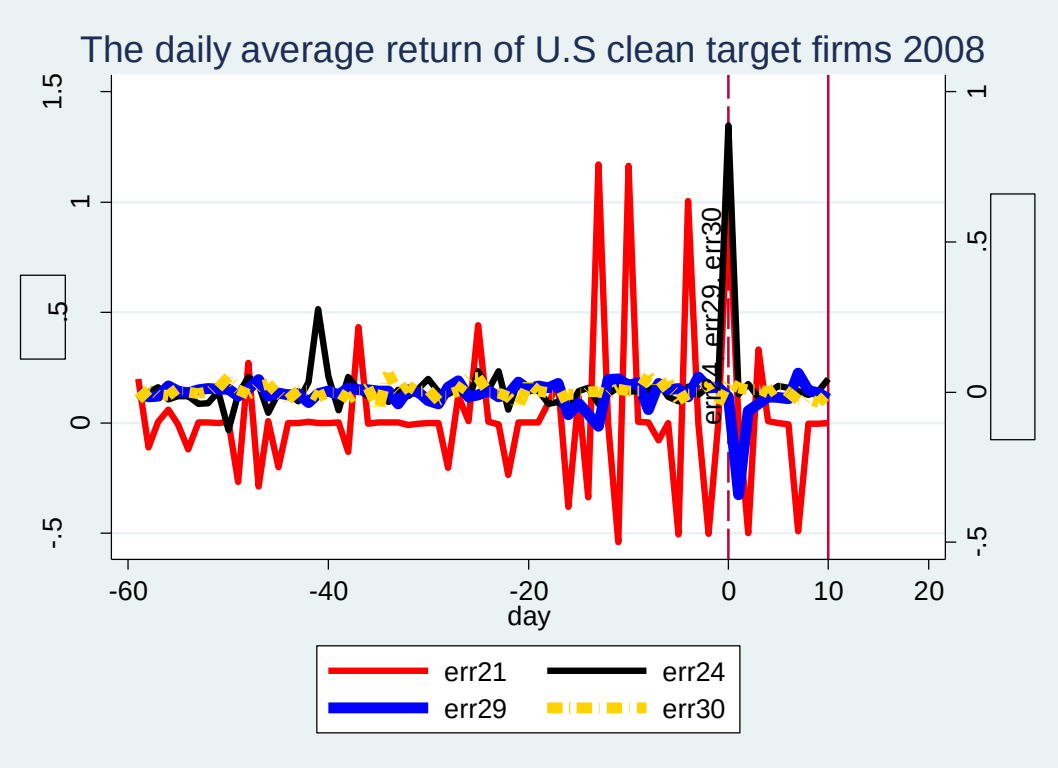
Figure 6.3 The daily average return of the U.S target firms 2008



Graph 6.12(a)

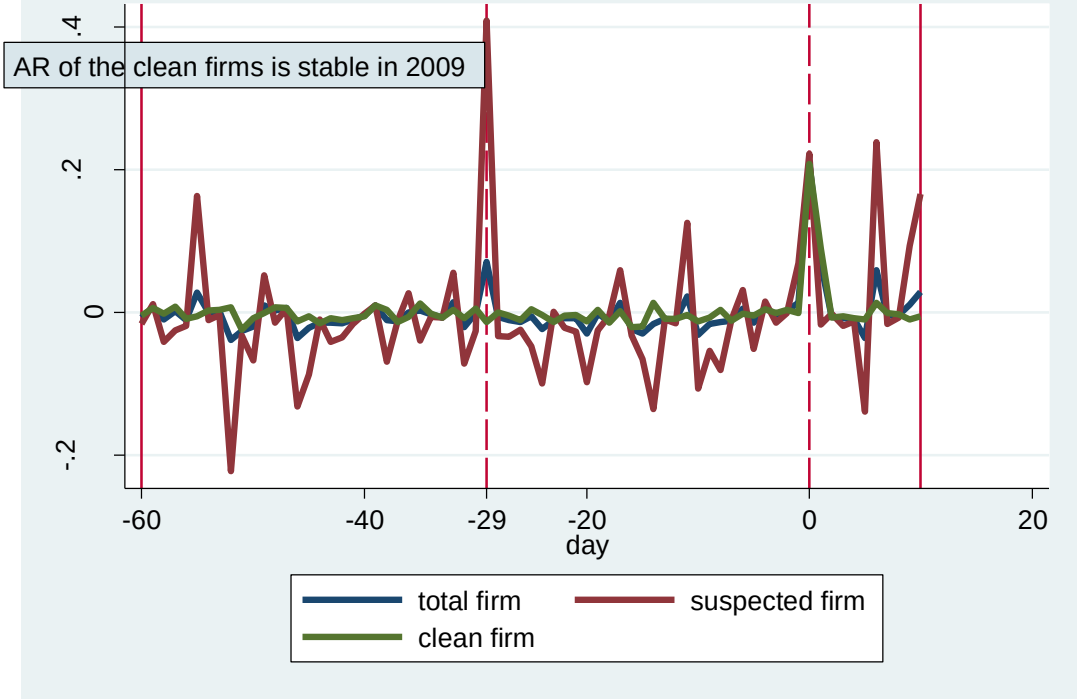


Graph 6.12(b)



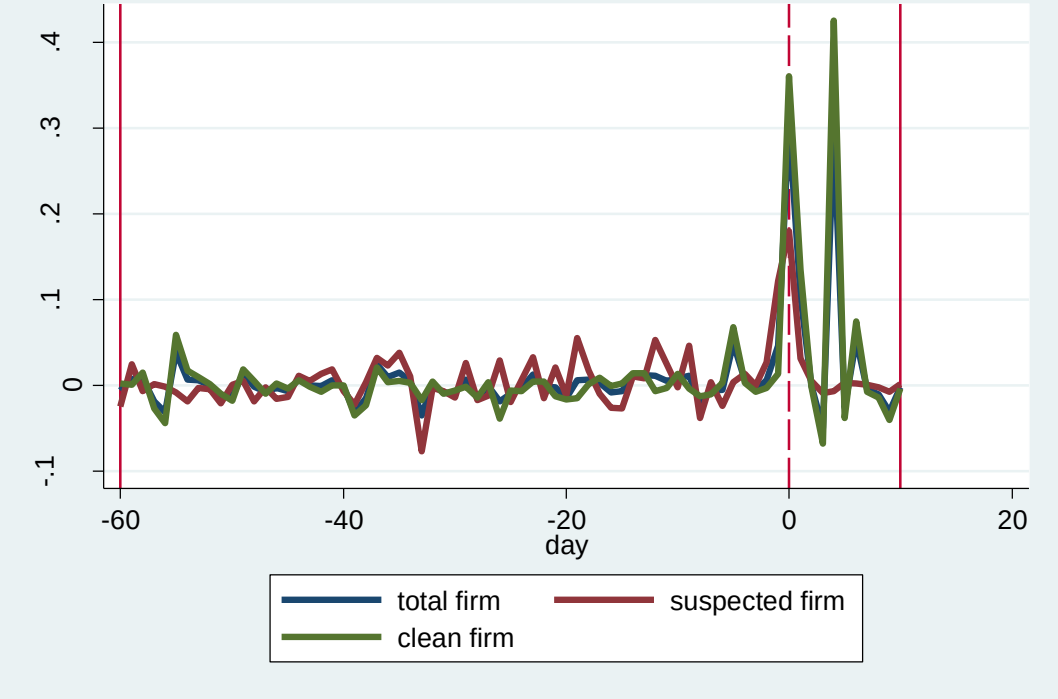
According Figure 6.3, Graph 6.12(a) and Graph 6.12(b), the pattern of the AR of the clean firms from day -15 to day 0 is similar with that of the err21. Apart from the three significant spikes which appear from day -20 onwards, the err21 also has spikes observed from a period from day -50 to day -20. The err21 is Firm UST0820. In Filter 2-the news search, public released rumours will be searched to elucidate more information on this firm.

Figure 6.4 The daily average return of the U.S target firms 2009



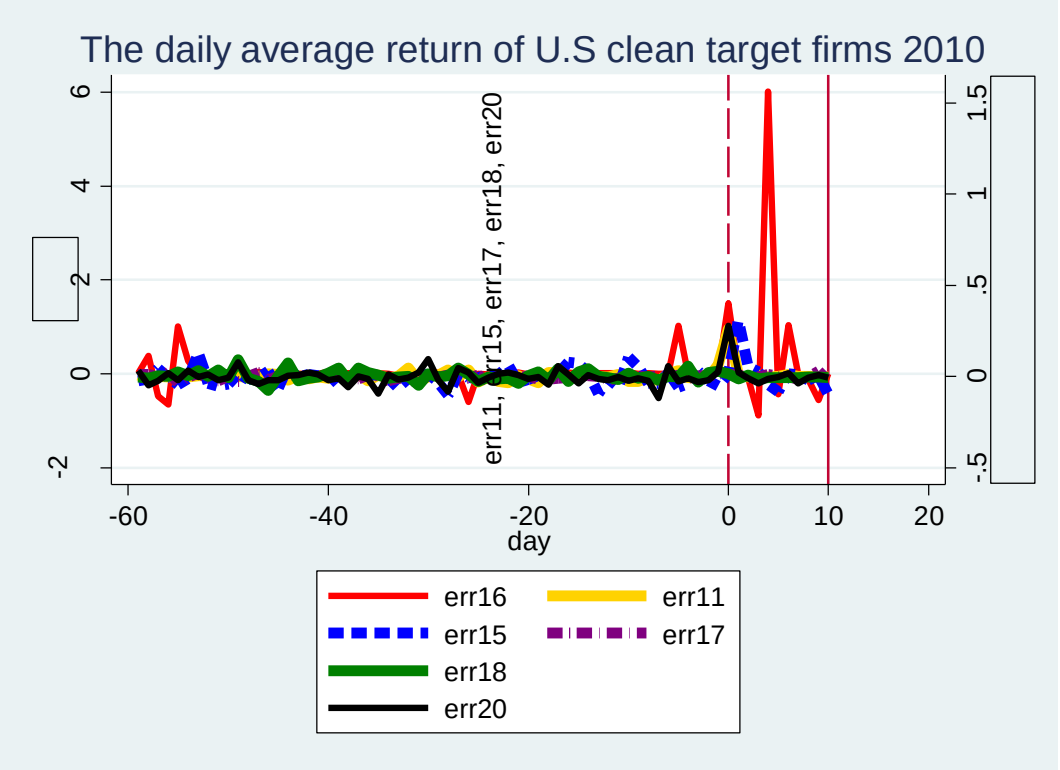
In the U.S in 2009, the AR of the clean firms is stable all through the event window. On the other hand, the AR of the suspected firm has several significant spikes from day -60 to day 0. It is worth noting that these spikes include both significant positive and significant negative. On day 0, the clean and suspected firms have almost the same AR which is about 20%.

Figure 6.5 The daily average return of the U.S target firms 2010

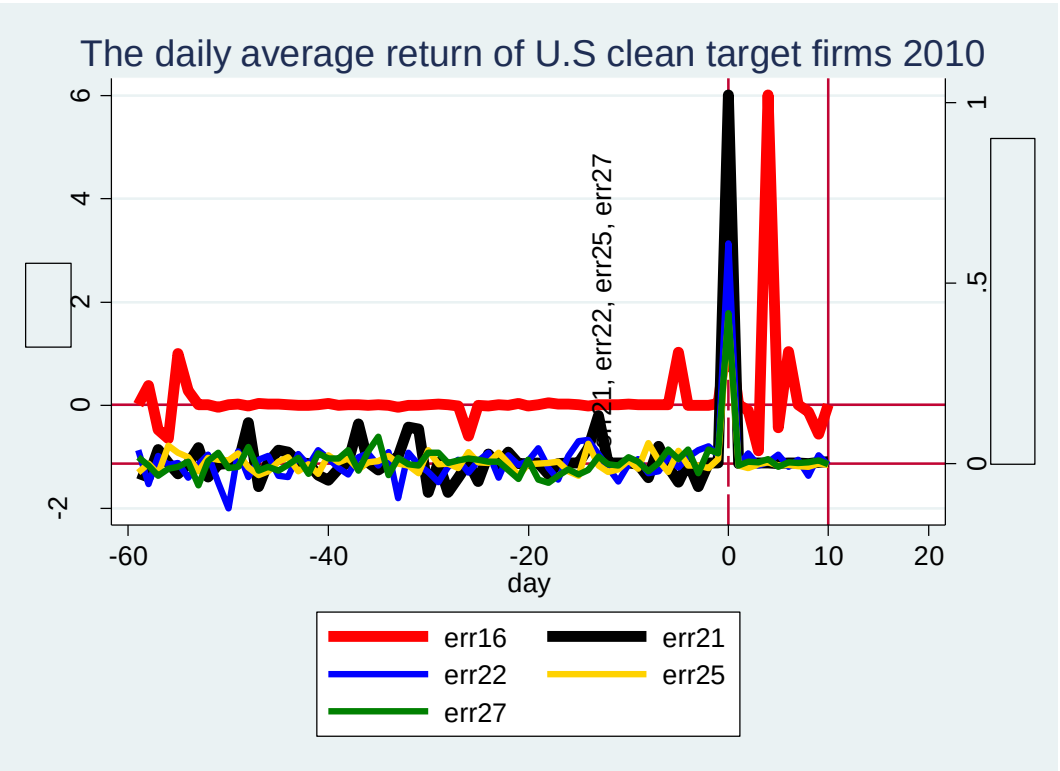


According to Figure 6.5, the AR of the clean firms is comparatively stable and the AR of the suspected firms has several spikes before merger announcement. However, on day -55 and day -5, two significant spikes of AR of the clean firms are observed. On day 0, the AR of the clean firms is higher than that of the suspected firms. All the ARs of the clean firms are plotted in Graph 6.13 for further study.

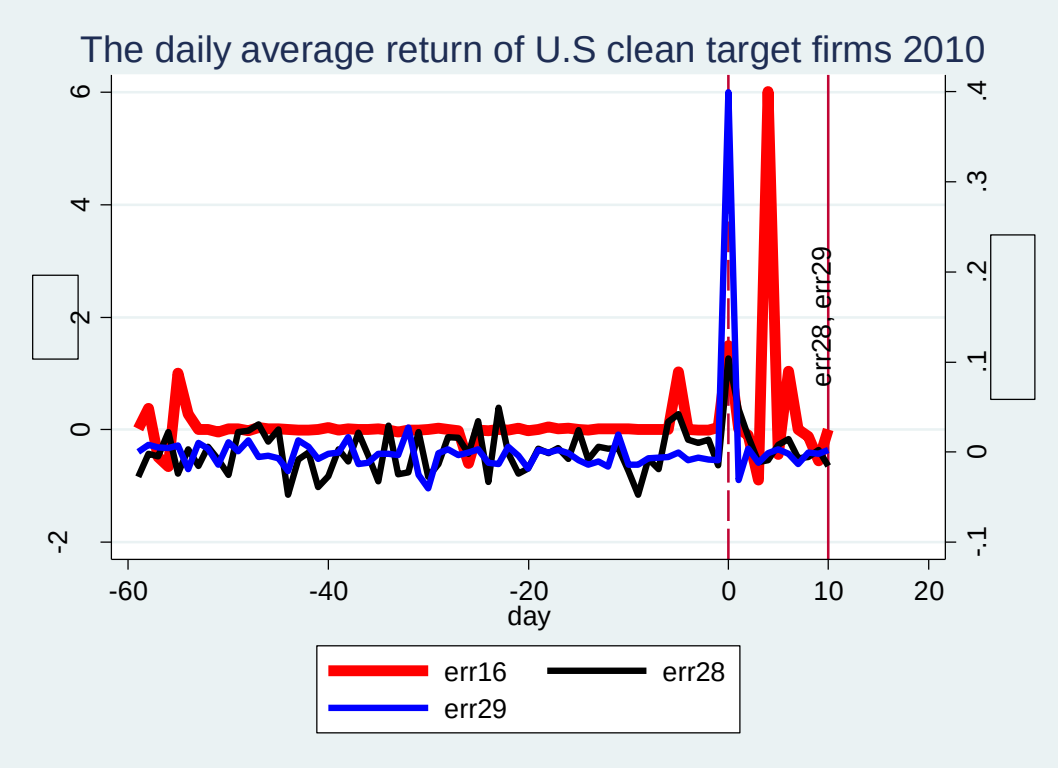
Graph 6.13(a)



Graph 6.13(b)



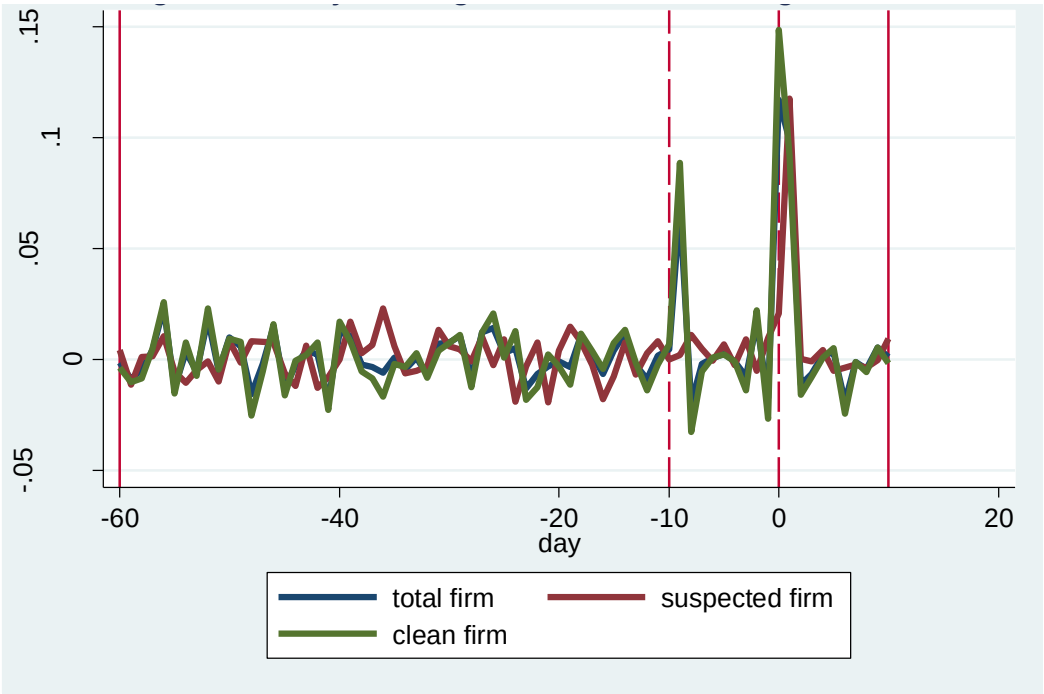
Graph 6.13(c)



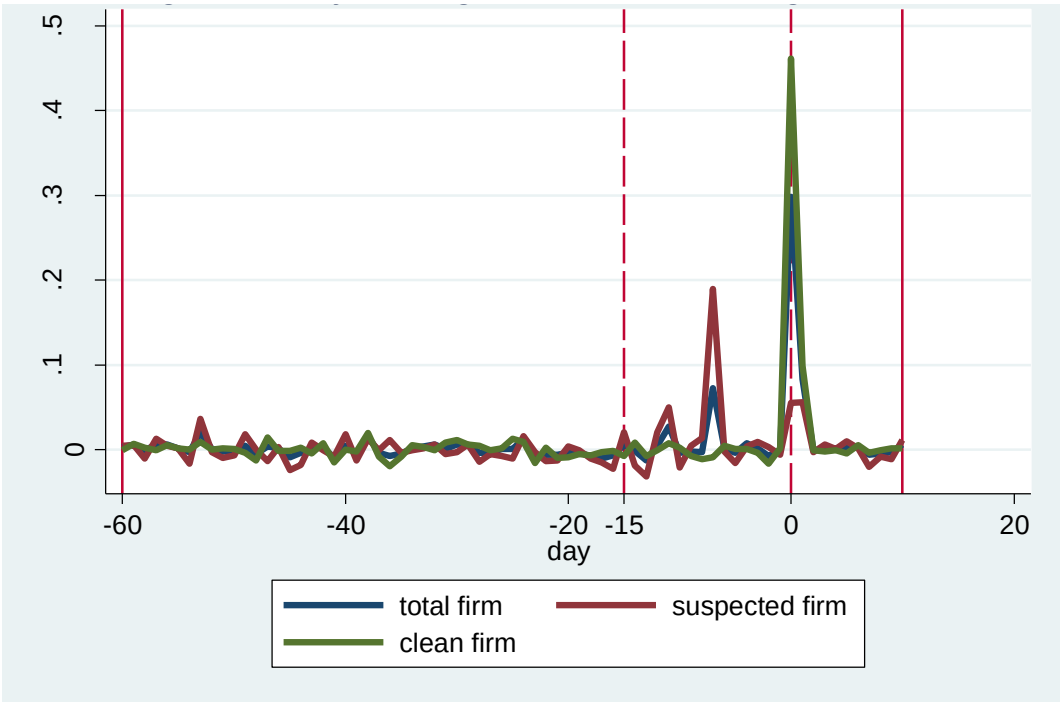
According to Graph 6.13(a), Graph 6.13(b) and Graph 6.13(c), the AR of err16 has the same pattern as the AR of the clean firms in Figure 6.5. Similarly, the AR of err16 has two significant spikes on both day -55 and day -5. This is suspected to have influenced the AR of clean firms in Figure 6.5. When refer back, err16 is the Firm T1011. In Filter 2-the news search, public released rumours will be searched to elucidate more information on this firm.

Figures 6.6-6.10 show the AR for the U.S target firms from 2006 to 2010 based on Tables 6.8-6.12 from the market adjusted model.

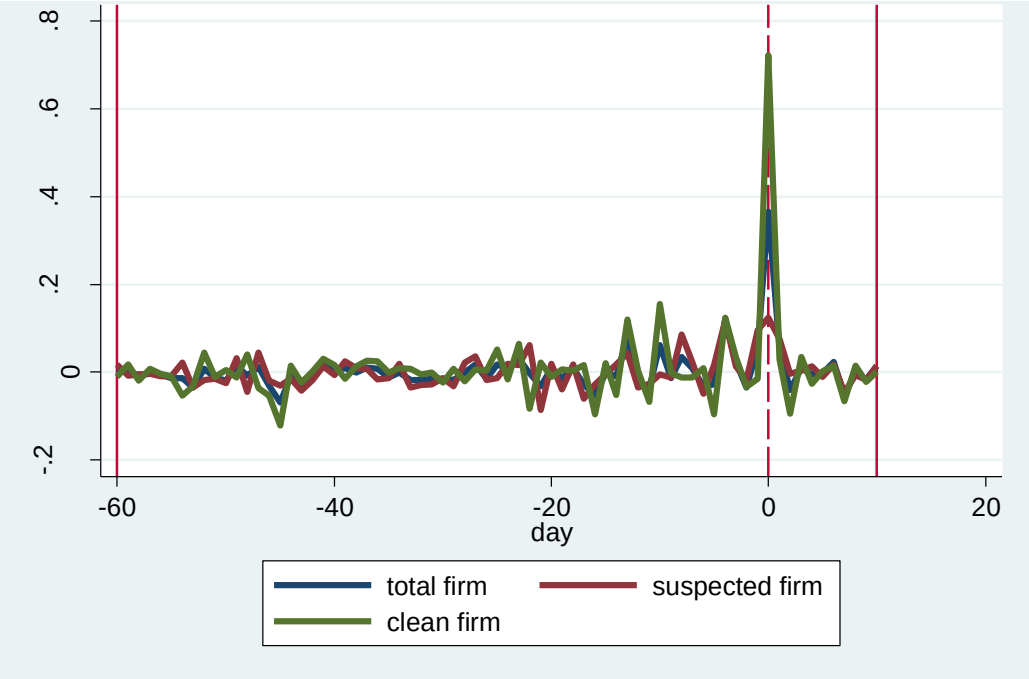
Figures 6.6: The AR for the U.S target firms in 2006 from the market adjusted model



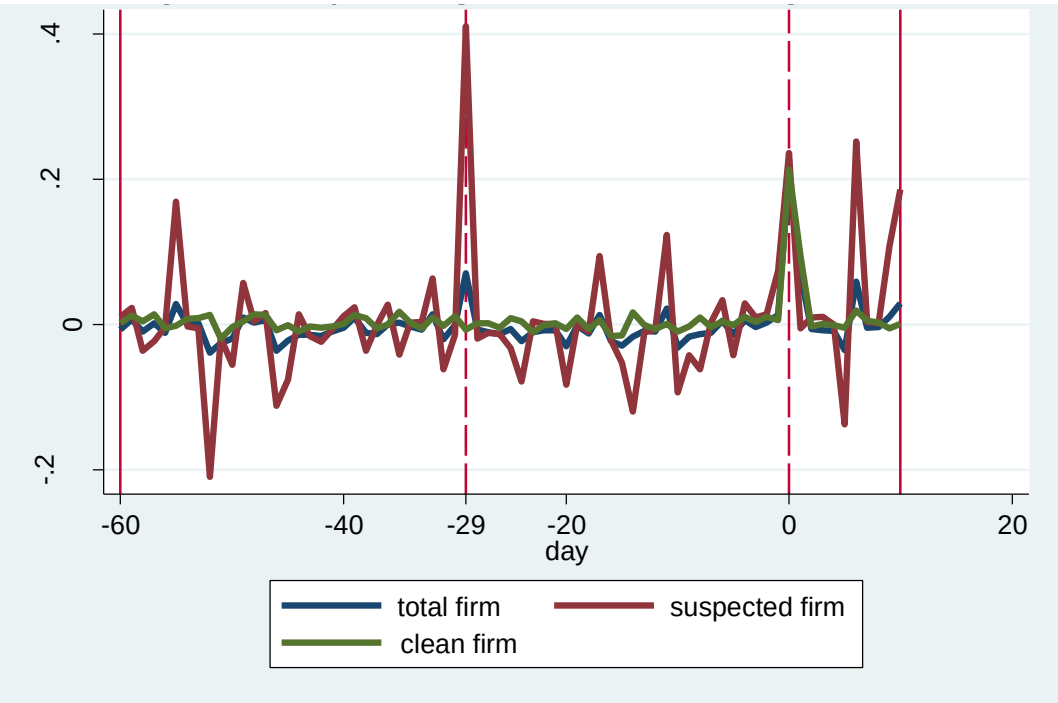
Figures 6.7: The AR for the U.S target firms in 2007 from the market adjusted model



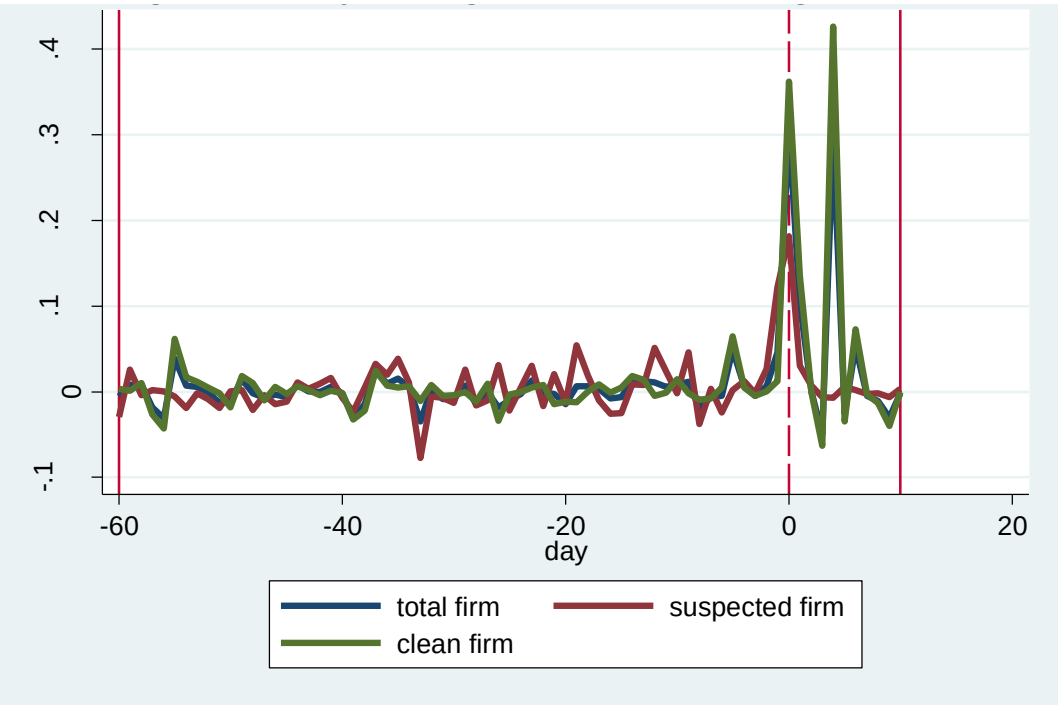
Figures 6.8: The AR for the U.S target firms in 2008 from the market adjusted model



Figures 6.9: The AR for the U.S target firms in 2009 from the market adjusted model



Figures 6.10: The AR for the U.S target firms in 2010 from the market adjusted model



Although Tables 6.8-6.12 seem different from the Tables 6.2-6.6, according to Figures 6.6-6.10, the results from the market-adjusted model are visually identical with those from the market model. As a result, the discussion is omitted for the results from the market-adjusted model.

Table 6.13: The codes of the clean, suspected and suspected after the plotting firms after the dummy variable approach in the U.S from 2006 to 2010

2006					
The code of the clean firms			The code of the suspected firms		The suspected after the plotting
UST0601	UST0609	UST0616	UST0602		UST0605
UST0603	UST0610	UST0618	UST0607		
UST0604	UST0612	UST0619	UST0611		
UST0606	UST0613	UST0620	UST0614		
UST0608	UST0615		UST0617		
2007					
The code of the clean firms			The code of the suspected firms		The suspected after the plotting
UST0701	UST0708	UST0720	UST0706	UST0717	None
UST0702	UST0709		UST0711	UST0718	
UST0703	UST0710		UST0713	UST0719	
UST0704	UST0712		UST0714		

UST0705	UST0716		UST0715		
2008					
The code of the clean firms		The code of the suspected firms			The suspected after the plotting
UST0801	UST0814	UST0802	UST0809	UST0818	UST0820
UST0804	UST0817	UST0803	UST0811	UST0819	
UST0808		UST0805	UST0813		
UST0810		UST0806	UST0815		
UST0812		UST0807	UST0816		
2009					
The code of the clean firms				The code of the suspected firms	The suspected after the plotting
UST0901	UST0909	UST0915	UST0920	UST0903	None
UST0902	UST0910	UST0916		UST0905	
UST0904	UST0912	UST0917		UST0906	
UST0907	UST0913	UST0918		UST0911	
UST0908	UST0914	UST0919			
2010					
The code of the clean firms			The code of the suspected firms		The suspected after the plotting
UST1002	UST1009	UST1017	UST1001	UST1019	UST1011
UST1003	UST1010	UST1018	UST1004		
UST1005	UST1012	UST1020	UST1007		
UST1006	UST1013		UST1014		
UST1008	UST1015		UST1016		

Source: Author's summation

Section 6.3.3The analysis of the CAARs after the dummy variable approach for the targets

The previous literature assumes that if there are no unusual price movements prior to the announcement date, the CAAR would be expected to fluctuate randomly about zero. However, if there is possible existence of insider trading, one would expect a build up in the CAAR (Keown and Pinkerton, 1981). Figures 6.11-6.15 give the CAAR of both the suspected and clean firms in the U.S from 2006 to 2010 after the dummy variable approach.

Figure 6.11: The CAAR of the suspected and clean U.S. target firms in 2006

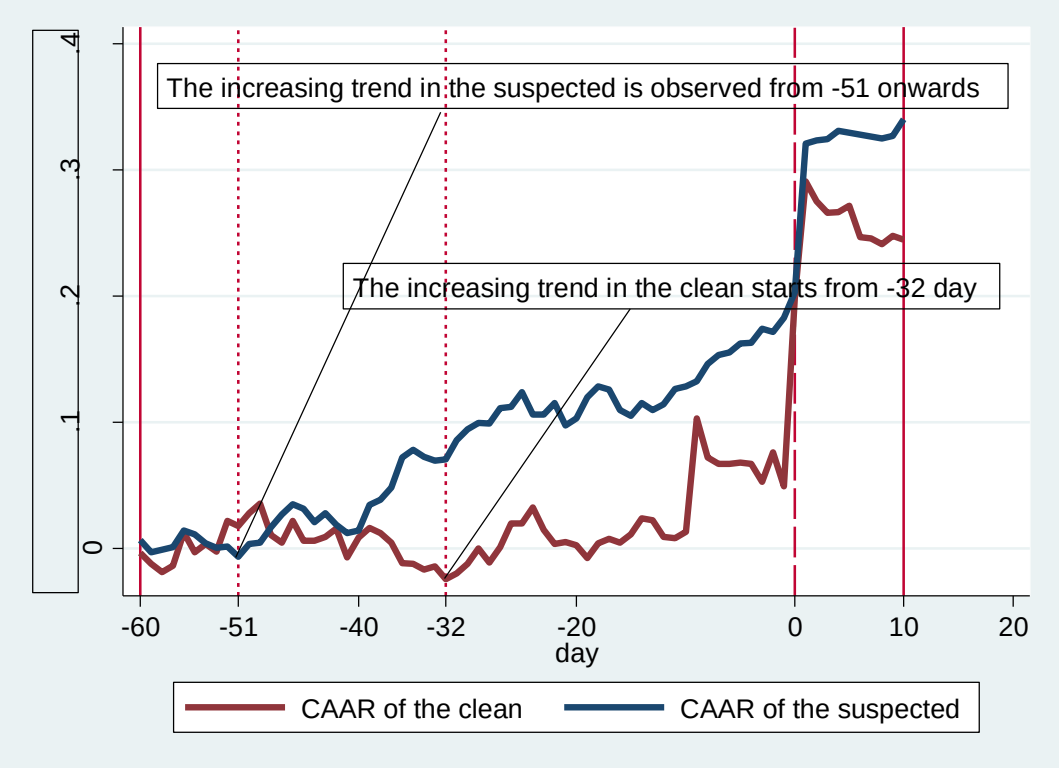
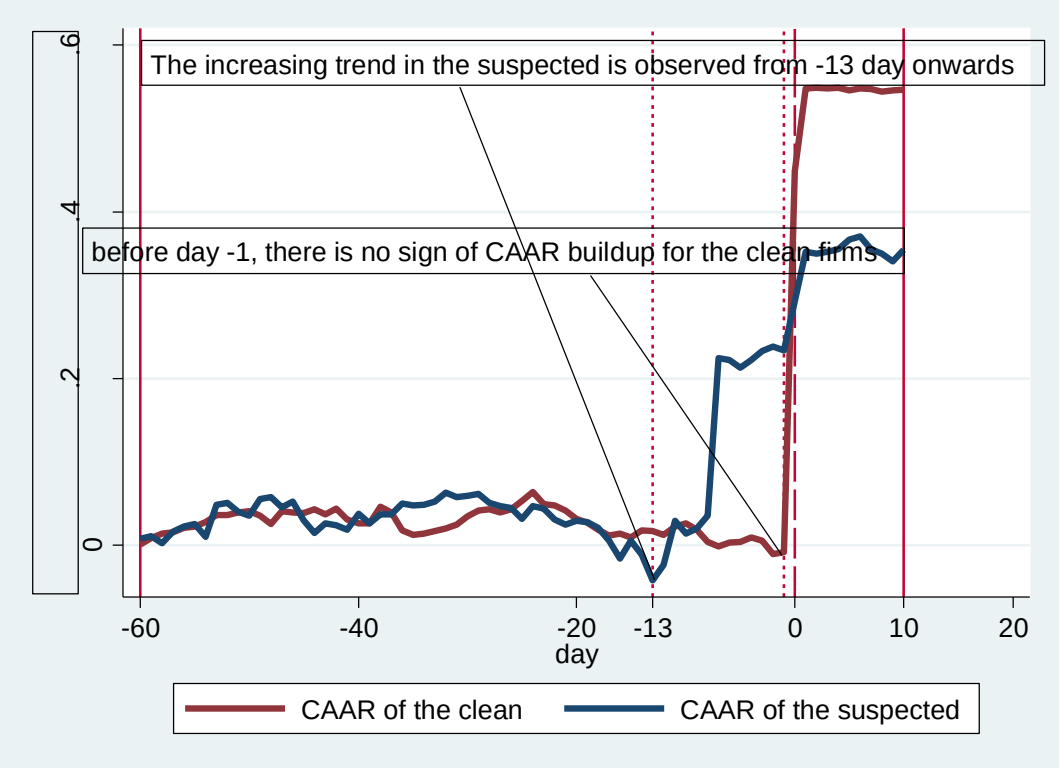


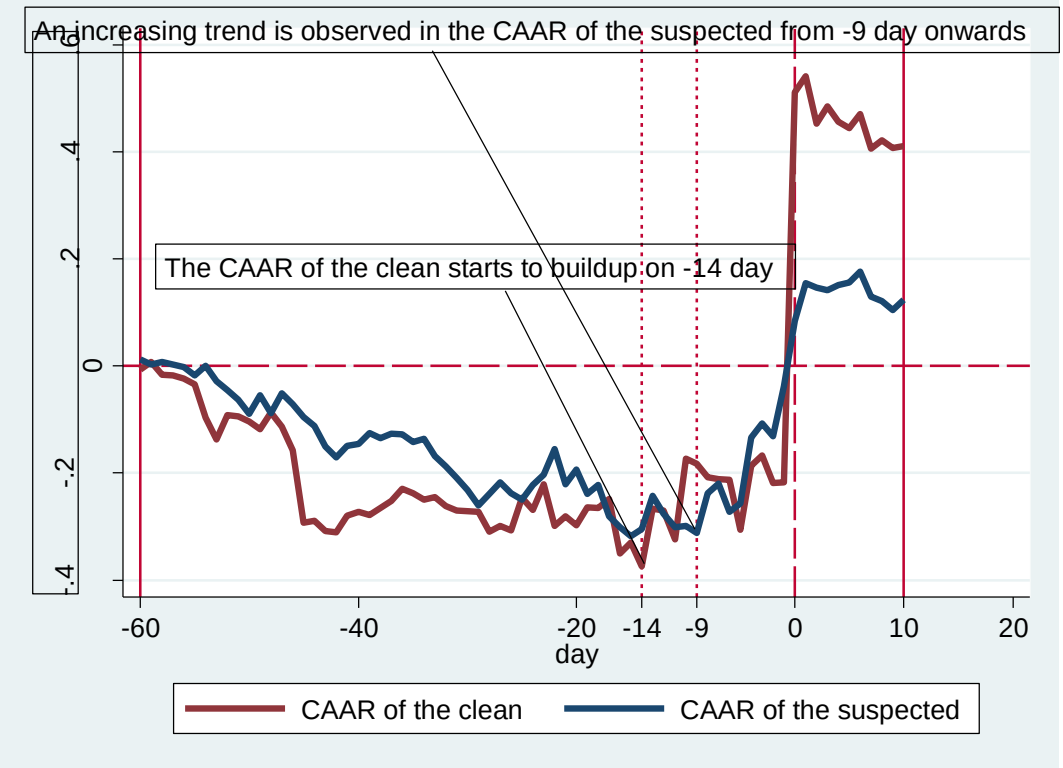
Figure 6.11 is the CAAR of the suspected and clean U.S target firms in 2006. After the first filter-the dummy variable approach, an increasing trend in both the suspected and the clean is observed. The difference is that the CAAR of the suspected firms starts to buildup from day -51 onwards while that of the clean firms begins from day -32 onwards. This is an indication that after the first filter, the 'clean' firms are not yet absolutely clean.

Figure 6.12: The CAAR of the suspected and clean U.S. target firms in 2007



According to Figure 6.12, an increasing trend of the CAAR buildup for the suspected firms is observed from day -13 onwards. For the clean firms, there is no sign of CAAR buildup throughout the event window. The CAAR of the clean firms increases dramatically on day -1.

Figure 6.13: The CAAR of the suspected and clean U.S. target firms in 2008



According to Figure 6.13, both the CAAR of the clean and the CAAR of the suspected decrease to about -40% from day -60 to day -20. However, from day -14 onwards, the CAAR of the clean firms starts to increase and on the other hand, for the CAAR of the suspected firms, the increasing trend is observed later on day -9. As a result, although both the CAAR of the clean and the CAAR of the suspected start to buildup from negative, the increasing trend is pronounced for both, but more for the suspected.

Figure 6.14: The CAAR of the suspected and clean U.S. target firms in 2009

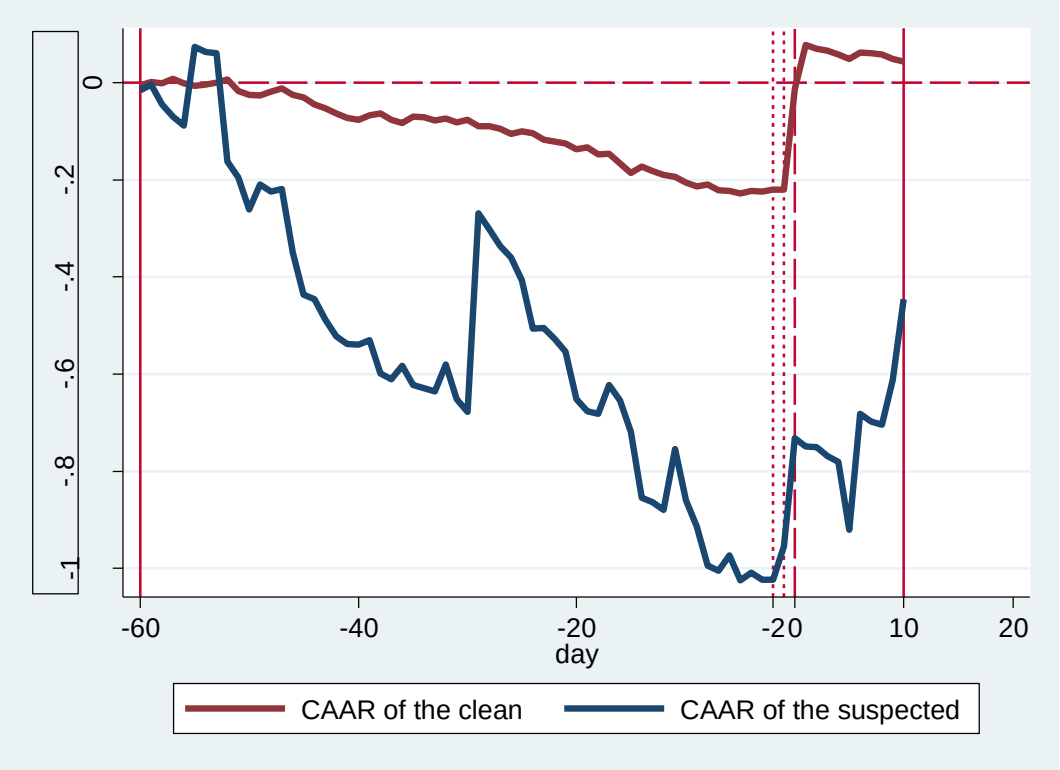
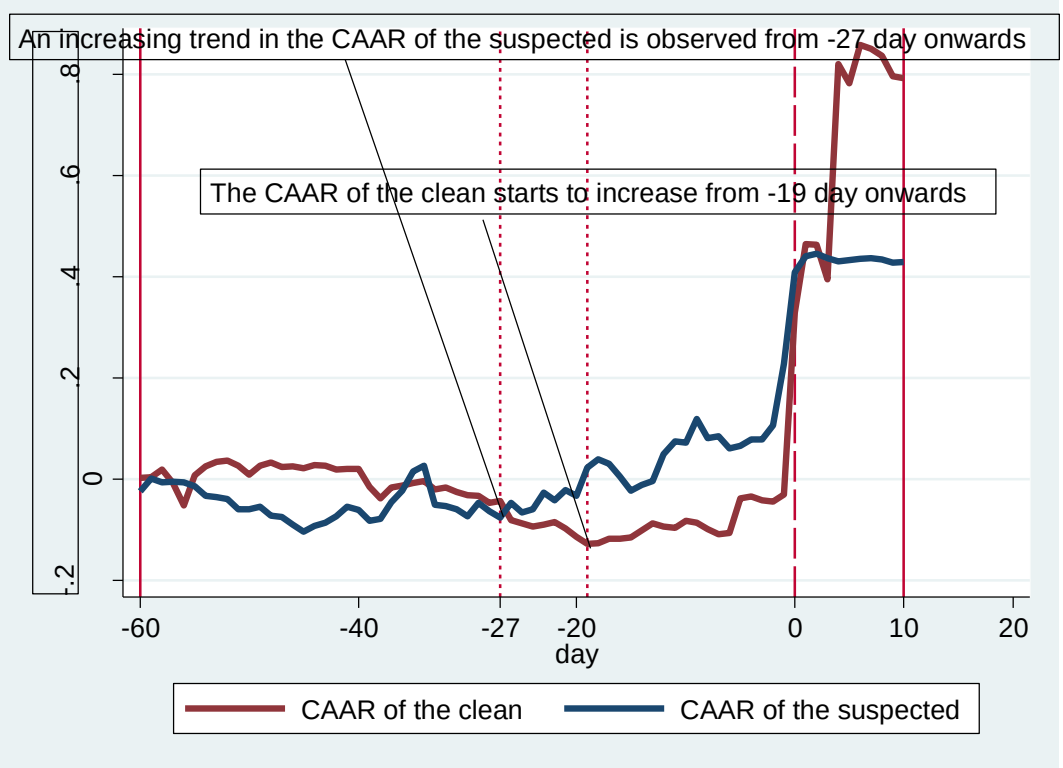


Figure 6.14 is the CAAR of the suspected and clean U.S target firms in 2009. It is very noticeable that the CAAR of the suspected decreases sharply to -100% from day -60 to day -2. From day -2 onwards, it starts to increase and ends up at -70% on day 0. The downward trend in the suspected firms may be linked to the industry of firms being taken over in the crisis. But still, the spikes on -30 day and -12 day may indicate possible insider trading. By day 0, the insider traders have lost money, or at least the day -30sh one would. But they would then have regained that in the days following day 0 and the gains may well have gone on increasing after day +10. The CAAR of the clean firms decreases gradually to -20% before -1 day on which day it begins to increase. The CAAR of the clean firms ends up at about 0% on the merger announcement day, but from a negative starting point the day before and hence a big jump on day 0.

Figure 6.15: The CAAR of the suspected and clean U.S. target firms in 2010



According to Figure 6.15, an increasing trend in the CAAR of the suspected is observed from day -27 onwards, though with occasional dips. On day -3, the CAAR of the suspected increases sharply and ends up at 40% on day 0. For the clean firms, the increasing trend is observed from day -20 onwards. On day -1, the CAAR of the clean firms increases sharply and ends up almost the same as the suspected firms at 40% on day 0. Since for both categories, an increasing trend before the merger announcement is observed, the clean firms may not yet absolutely 'clean'.

Section 6.3.4Results of the first filter-the dummy variable approach for the bidders

Section 6.3.4 is the analysis of the bidders in the U.S from 2006 to 2010. Tables 6.14-6.18 in the appendix are the results of the AR and the CAAR for the bidder firms in the U.S from 2006 to 2010. Figures 6.16-6.20 give the AR for the U.S bidders from 2006 to 2010 from the market model based on Tables 6.14-6.18. This thesis focuses mainly on the targets, in part because there seems less of interest to not in terms of what is happening to the bidders, and therefore, only the first filter is applied to the bidders.

Figure 6.16 The daily average return for the U.S bidder firms in 2006

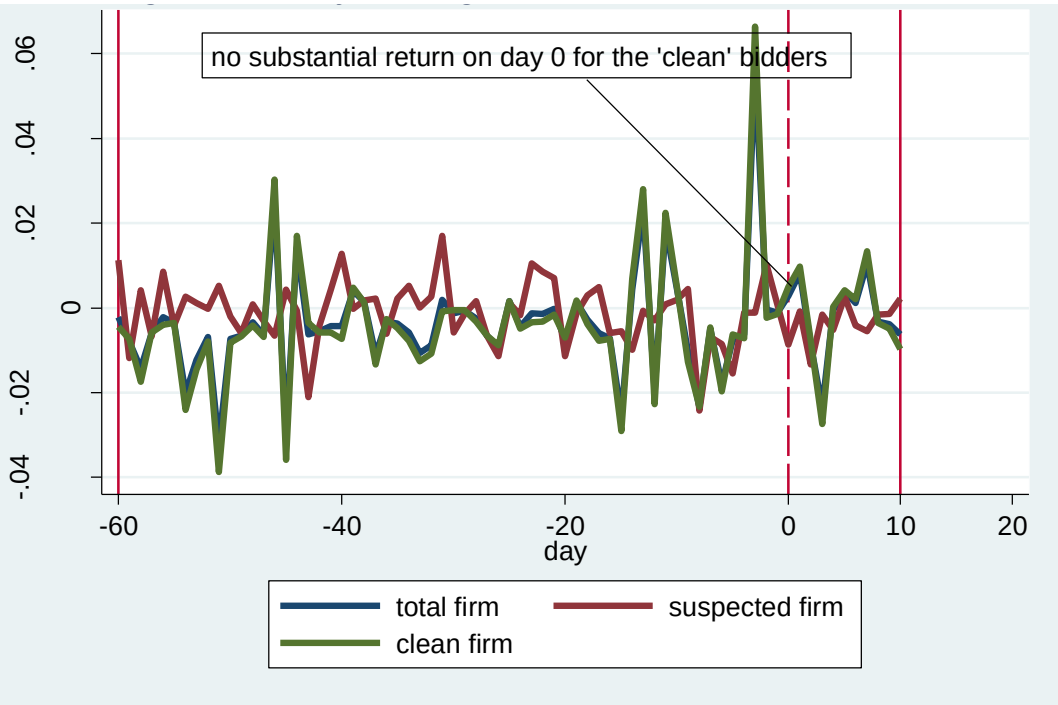


Figure 6.17 The daily average return for the U.S bidder firms in 2007

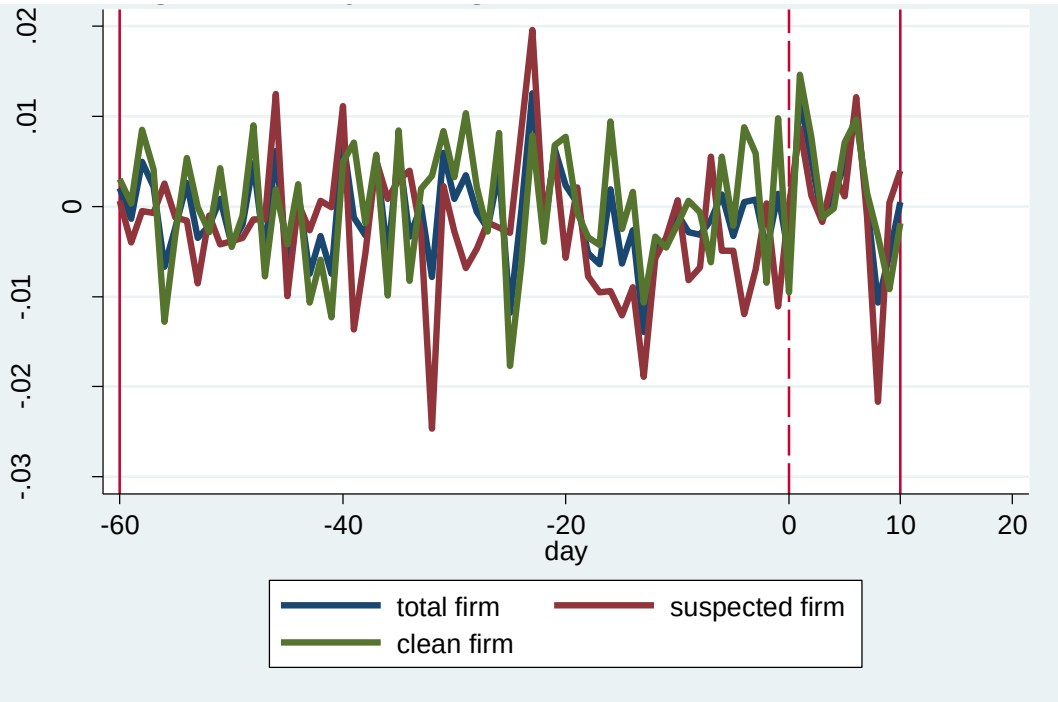


Figure 6.18 The daily average return for the U.S bidder firms in 2008

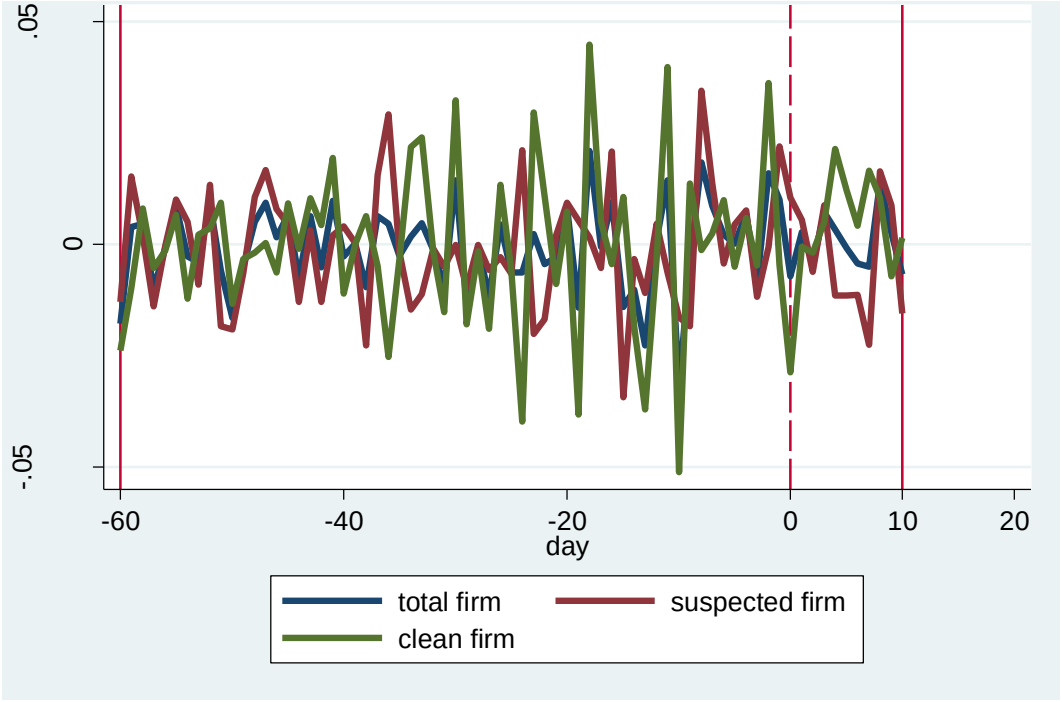


Figure 6.19 The daily average return for the U.S bidder firms in 2009

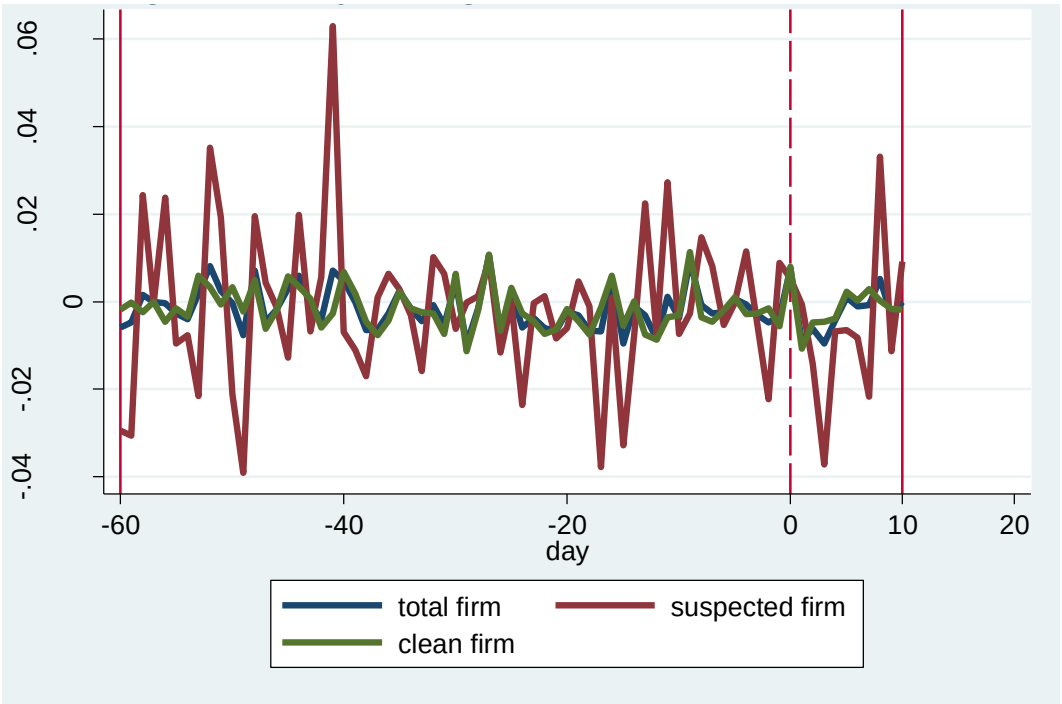
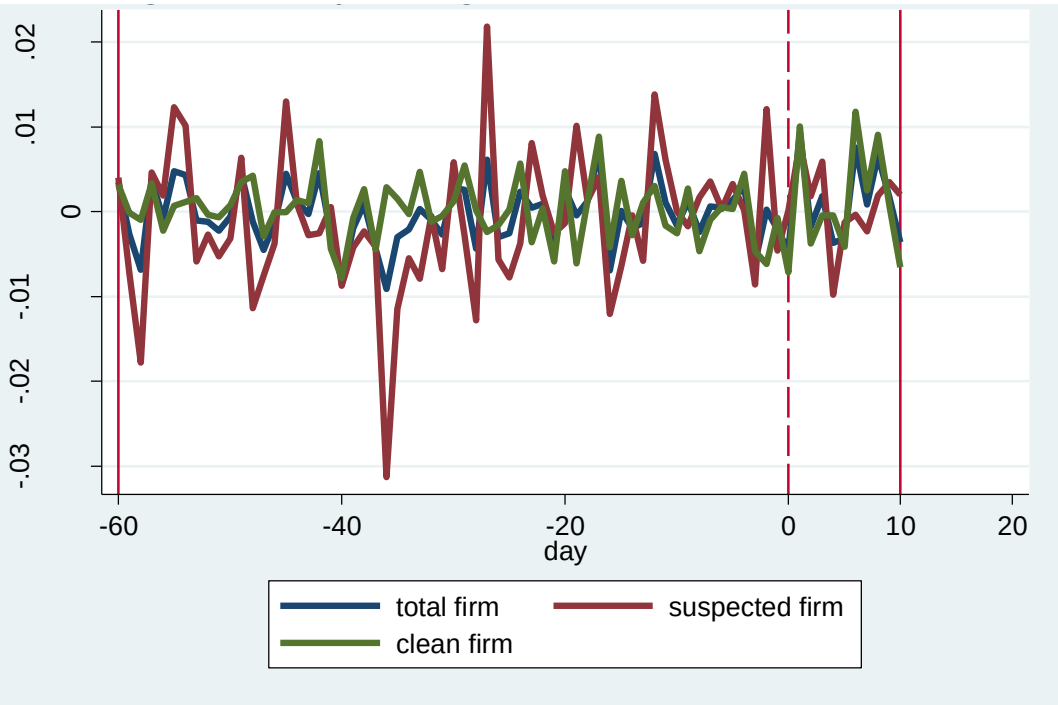


Figure 6.20 The daily average return for the U.S bidder firms in 2010



According to Figures 6.16-6.20, it appears to be the case that the bidders are not experiencing the day 0 abnormal return run-up as the targets. Furthermore, the abnormal returns the bidders get are much lower than those the targets get. Apart from this, there is no obvious pattern for the clean, suspected and total bidder firms.

Tables 6.24-6.28 in the appendix give the results of the AR and the CAAR of the U.S bidder firms from 2006 to 2010 based on the market adjusted model. Although Tables 6.24-6.28 seem different from the Tables 6.14-6.18, the graphs from the market-adjusted model are identical with those from the market model. As a result, the discussion is omitted for the results from the market-adjusted model.

Section 6.3.5The CAAR analysis after the first filter for both the targets and bidders

Section 6.3.5 is the CAAR analysis of both the targets and bidders after the dummy variable approach. Figures 6.21-6.25 give the CAAR of the U.S targets and bidders from 2006 to 2010

Figure 6.21

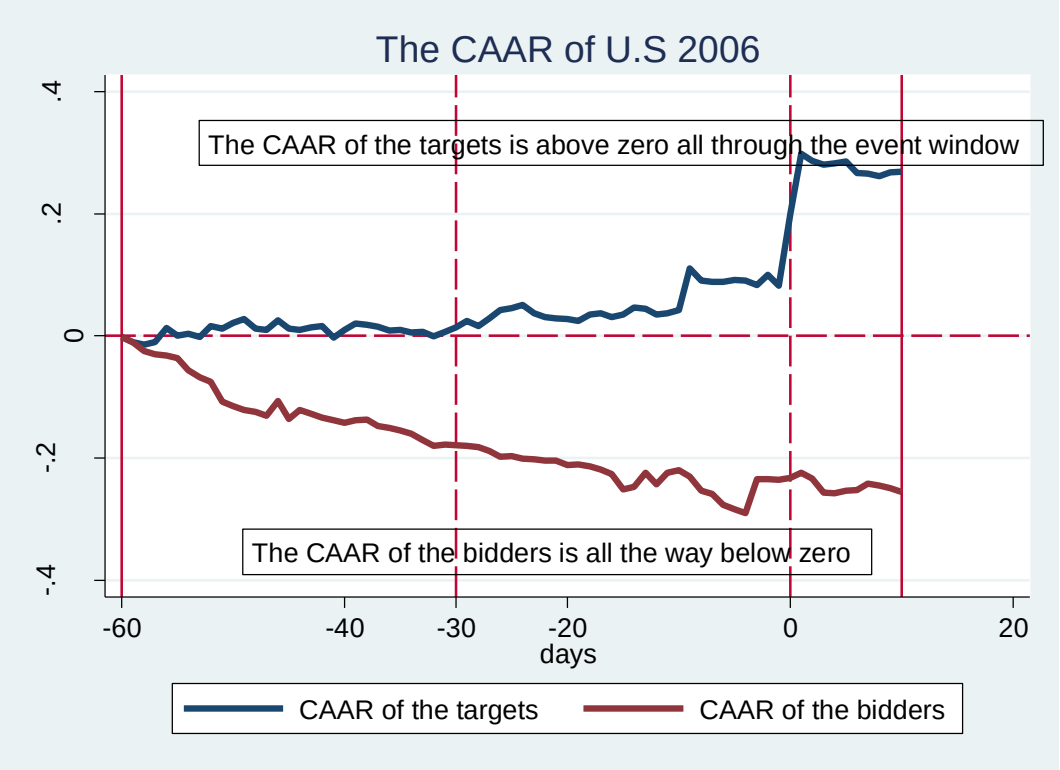


Figure 6.22

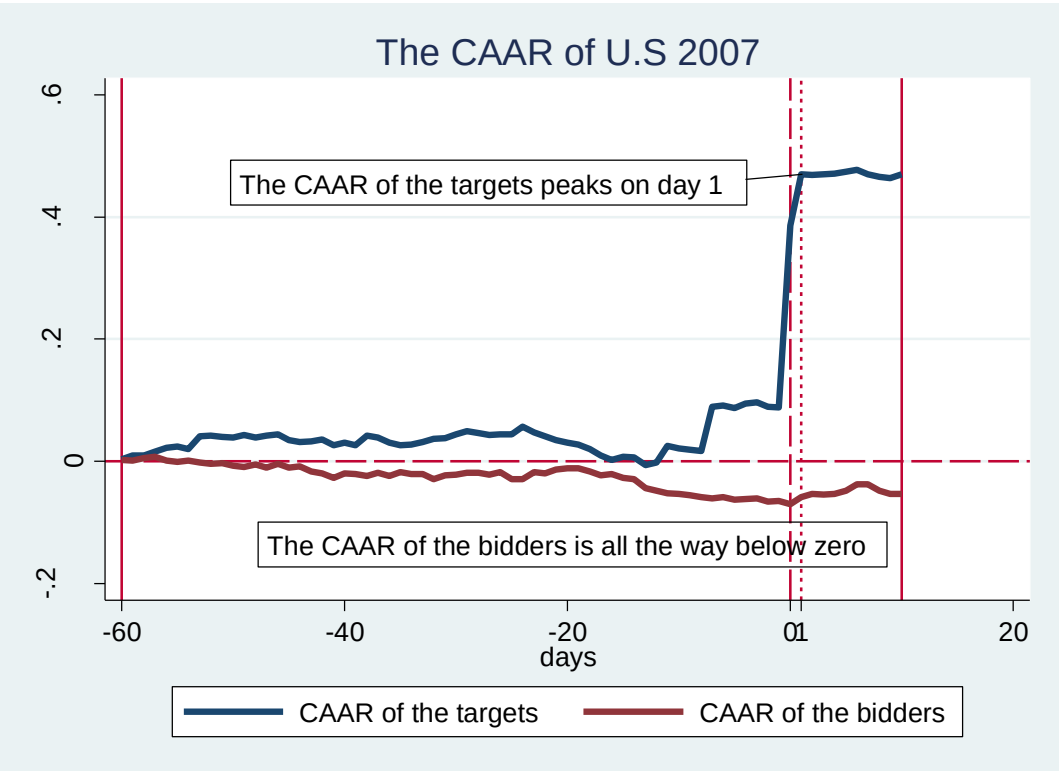


Figure 6.23

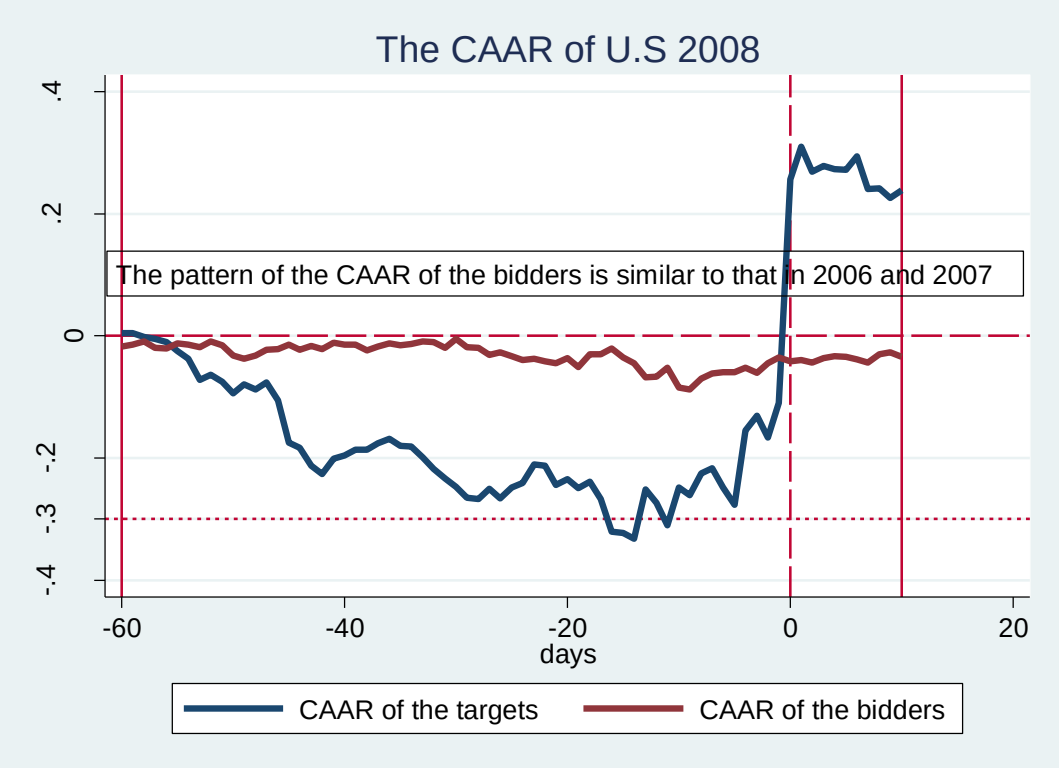


Figure 6.24

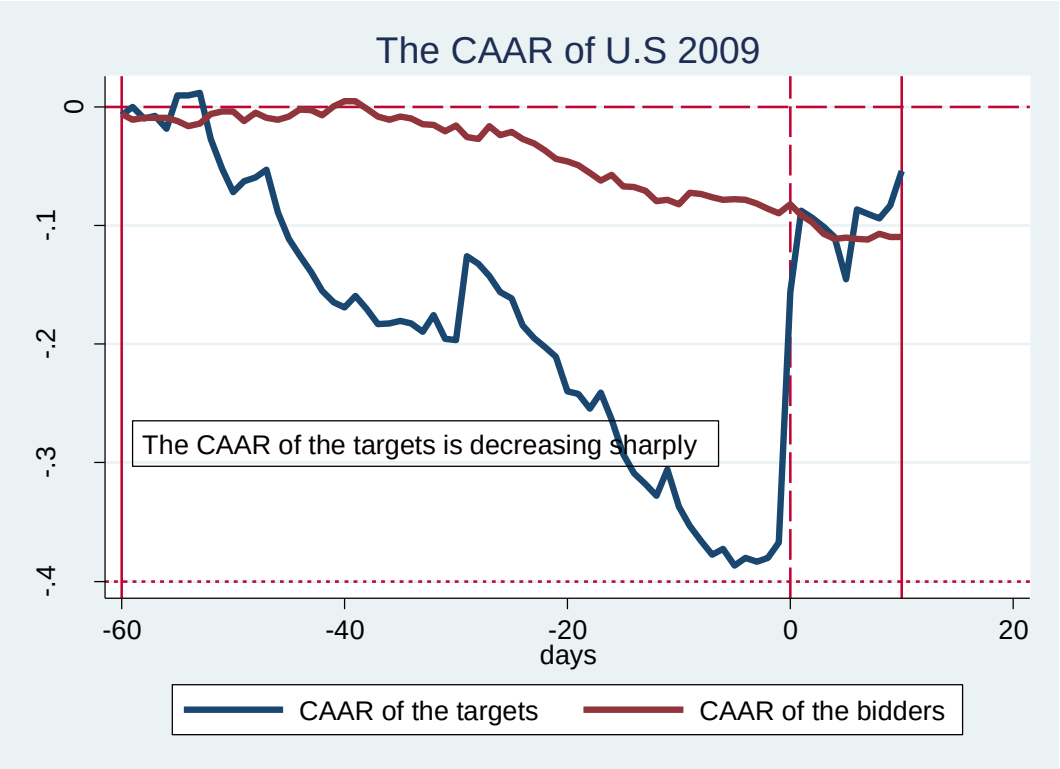
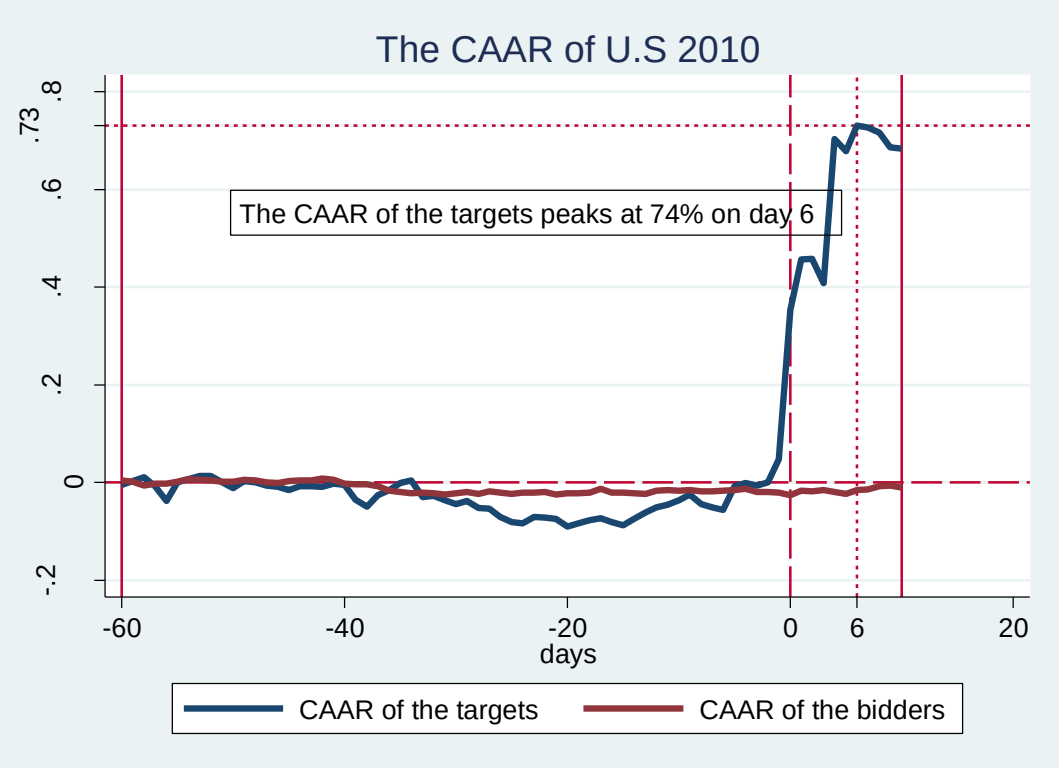


Figure 6.25



According to Figure 6.21-6.25, generally, the CAARs for the targets from 2006 to 2010 are upward sloping while the CAARs for the bidders are more stable. For years 2006, 2007 and 2010, the CAARs for the targets keep fluctuating around 0% from day -60 to day 0, and then increase rapidly on and after the announcement day. In 2006, the CAAR keeps on increasing to 30%, in 2007, the CAAR increases to about 50% and in 2010, it is very notable that the CAAR increase to approximately 74%. But for years 2008 and 2009, the CAARs for the targets decrease sharply to about -40% from day -60 to day 0 and from day 0 onwards, the CAARs start to increase. However, in 2009, even the CAAR begins to increase from day 0, it is still below 0% which is to say, the cumulative abnormal returns for the targets in 2009 are negative. The result of 2009 supports the hypothesis that in the heat of the crisis the nature of takeovers changes with poorly performing firms being targeted. But in 2010, the stock market starts to rebound.

Section 6.3.6The news search before the announcement date

Tables 6.29-6.33 illustrate the public information leakage for each target firm in the U.S from 2006 to 2010. The news search is done with Nexis (mentioned in chapter 4). Comparing the news search results of the U.S to that of the U.K., less cases of director trading prior to the announcement dates are found. Only two cases are found during the five years period. They are Firm UST0710 (director trading on day -28) and Firm UST0713 (director trading on day -9). However, there is no clear evidence of directors' dealing of the shares affecting the share prices. Moreover, there is also no evidence of public rumours influencing the share price movements.

Table 6.29: The firms' names and the days on which the firms have abnormal returns in the U.S 2006

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
UST0601	+1 day	None	None
UST0602	-36 day	None	None
UST0607	-42 day	None	None
	-9 day		
	-5 day		
	+1 day		
UST0608	+1 day	None	None
	+2 day		
UST0610	+1 day	None	None
UST0611	-48 day	None	None
	-11 day		
	+1 day		
UST0614	-41 day	None	None
	+1 day		
UST0616	None	-1 day	None
UST0617	-38 day	None	None
	-29 day		
	-28 day		
	-25 day		
	+1 day		
UST0618	None	-3 day	None
UST0619	+1 day	None	None
UST0620	+1 day	None	None
Firms with neither abnormal return nor public rumours: UST0603, UST0604, UST0605, UST0606, UST0609, UST0612, UST0613, UST0615			

The dummy variable approach suggests that the AR of Firm UST0605 has several spikes before merger announcement, among which the most significant one appears on day -9. However, since no public rumours or directors' trading on shares are found, Firm UST0605 is suspected of getting involved in insider trading.

Table 6.30: The firms' names and the days on which the firms have abnormal returns in the U.S 2007

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
UST0710	None	None	-28 day
UST0704	+1 day	None	None
UST0714	-4 day	None	None
	-1 day		
	0 day		
UST0706	-37 day	None	None
UST0713	-16 day	None	-9 day
	-15 day		
	-3 day		
	-2 day		
	+1 day		
UST0703	None	-1 day	None
UST0719	-9 day	None	None
	-8 day		
	-7 day		
UST0715	-49 day	None	None
UST0720	None	None	None
UST0705	None	None	None
UST0717	-24 day	None	None
Firms with neither abnormal return nor public rumours: UST0701, UST0702, UST0707, UST0708, UST0709, UST0712, UST0716			

Table 6.31: The firms' names and the days on which the firms have abnormal returns in the U.S 2008

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
UST0815	-18 day	-3 day	None
	-6 day		
	-4 day		
UST0816	-21 day	None	None
	+1 day		
UST0819	-24 day	None	None
UST0807	-33 day	None	None
	-29 day		
	-25 day		

	-24 day		
	-23 day		
	-22 day		
UST0803	-53 day	None	None
	-12 day		
	-6 day		
	-4 day		
	-3 day		
UST0806	-18 day	None	None
	-17 day		
	-14 day		
	-13 day		
	-12 day		
	-8 day		
	-7 day		
UST0802	-47 day	-4 day	None
		-5 day	
UST0818	-21 day	None	None
	-20 day		
	-19 day		
Firms with neither abnormal return nor public rumours: UST0801, UST0810, UST0817, UST0820			

In 2008, the dummy variable approach suggests that the AR of Firm UST0820 has several spikes before merger announcement. Three significant spikes are observed in a period from day -20 to 0. However, since no public rumours or directors' trading on shares are found, Firm UST0820 is suspected of getting involved in insider trading.

Table 6.32: The firms' names and the days on which the firms have abnormal returns in the U.S 2009

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
UST0919	+1 day	None	None
UST0914	None	-14 day	None
UST0905	-52 day	None	None
	-48 day		
	-45 day		
	+6 day		
UST0903	-14 day	-11 day	None
UST0906	-48 day	None	None
	-1 day		
UST0910	+1 day	None	None
UST0911	-29 day	None	None
UST0920	+6 day	None	None

UST0916	+1 day	None	None
UST0915	None	-27 day	None
Firms with neither abnormal return nor public rumours: UST0901, UST0902, UST0904, UST0907, UST0908, UST0909, UST0912, UST0913, UST0917, UST0918			

Table 6.33: The firms' names and the days on which the firms have abnormal returns in the U.S 2010

Target	**The day(s) on which abnormal return is detected**	**Public rumours**	**Director buys share**
UST1001	-43 day	None	None
	-41 day		
	-40 day		
UST1014	-12 day	-1 day	None
UST1004	-1 day	None	None
	0 day		
UST1009	+1 day	None	None
UST1011	+3 day	None	None
	+4 day		
	+5 day		
UST1005	None	-15 day	None
UST1006	None	-1 day	None
UST1002	+1 day	None	None
UST1003	None	-3 day	None
		-5 day	
		-41 day	
UST1007	-58 day	None	None
	-48 day		
	-46 day		
	-18 day		
	-1 day		
UST1016	-44 day	None	None
	-3 day		
	0 day		
UST1013	+9 day	None	None
	+10 day		
UST1019	-33 day	None	None
	-32 day		
Firms with neither abnormal return nor public rumours: UST1008, UST1010, UST1012, UST1015, UST1017, UST1018, UST1020			

In 2010, the dummy variable approach suggests that the AR of Firm UST1011 has a spike on day -5 which substantially influences the pattern of the clean firms in this year. Nevertheless, since no public rumours or directors' trading on shares are found, Firm UST1011 is suspected of getting involved in insider trading.

Section 6.3.7The categorization after two filters-the dummy variable approach and the news search

Table 6.34 shows the clean, the suspected, the clean after the news search and the suspected after the plotting firms in the U.S from 2006 to 2010 after dummy variable and news search. After the results are shown, the 'clean after news search' will be renamed as 'obscure' and the 'suspected after the plotting' will be categorized as 'suspected' if no news support is found in Table 5.35 for the reason of simplification for further studies.

Table 6.34: The codes of the clean, the suspected, the clean after the news search and the suspected after the plotting firms after two filters in the U.S from 2006 to 2010

2006						
The code of the clean firms			The code of the suspected firms		The clean after the news search	The suspected after the plotting
UST0601	UST0609	UST0616	UST0602		None	UST0605
UST0603	UST0610	UST0618	UST0607			
UST0604	UST0612	UST0619	UST0611			
UST0606	UST0613	UST0620	UST0614			
UST0608	UST0615		UST0617			
2007						
The code of the clean firms			The code of the suspected firms		The clean after the news search	The suspected after the plotting
UST0701	UST0708	UST0720	UST0706	UST0717	None	None
UST0702	UST0709		UST0711	UST0718		
UST0703	UST0710		UST0713	UST0719		
UST0704	UST0712		UST0714			
UST0705	UST0716		UST0715			
2008						
The code of the clean firms		The code of the suspected firms			The clean after the news search	The suspected after the plotting
UST0801	UST0814	UST0802	UST0809	UST0818	None	UST0820
UST0804	UST0817	UST0803	UST0811	UST0819		
UST0808		UST0805	UST0813			
UST0810		UST0806	UST0815			
UST0812		UST0807	UST0816			
2009						
The code of the clean firms			The code of the suspected firms		The clean after the	The suspected

					news search	after the plotting
UST0901	UST0909	UST0915	UST0920	UST0905	UST0903	None
UST0902	UST0910	UST0916		UST0906		
UST0904	UST0912	UST0917		UST0911		
UST0907	UST0913	UST0918				
UST0908	UST0914	UST0919				
2010						
The code of the clean firms			The code of the suspected firms		The clean after the news search	The suspected after the plotting
UST1002	UST1009	UST1017	UST1001	UST1019	None	UST1011
UST1003	UST1010	UST1018	UST1004			
UST1005	UST1012	UST1020	UST1007			
UST1006	UST1013		UST1014			
UST1008	UST1015		UST1016			

Source: Author's summation

Table 6.35: The codes of the clean, the suspected, and the obscure firm after two filters in the U.K from 2006 to 2010

2006					
The code of the clean firms			The code of the suspected firms		The obscure firm
UST0601	UST0609	UST0616	UST0602	UST0605	None
UST0603	UST0610	UST0618	UST0607		
UST0604	UST0612	UST0619	UST0611		
UST0606	UST0613	UST0620	UST0614		
UST0608	UST0615		UST0617		
2007					
The code of the clean firms			The code of the suspected firms		The obscure firm
UST0701	UST0708	UST0720	UST0706	UST0717	None
UST0702	UST0709		UST0711	UST0718	
UST0703	UST0710		UST0713	UST0719	
UST0704	UST0712		UST0714		
UST0705	UST0716		UST0715		
2008					
The code of the clean firms		The code of the suspected firms			The obscure firm
UST0801	UST0814	UST0802	UST0809	UST0818	None
UST0804	UST0817	UST0803	UST0811	UST0819	
UST0808		UST0805	UST0813	UST0820	
UST0810		UST0806	UST0815		
UST0812		UST0807	UST0816		
2009					
The code of the clean firms			The code of the suspected firms		The obscure firm

UST0901	UST0909	UST0915	UST0920	UST0905	UST0903
UST0902	UST0910	UST0916		UST0906	
UST0904	UST0912	UST0917		UST0911	
UST0907	UST0913	UST0918			
UST0908	UST0914	UST0919			

2010

The code of the clean firms			The code of the suspected firms		The obscure firm
UST1002	UST1009	UST1017	UST1001	UST1019	None
UST1003	UST1010	UST1018	UST1004	UST1011	
UST1005	UST1012	UST1020	UST1007		
UST1006	UST1013		UST1014		
UST1008	UST1015		UST1016		

Source: Author's summation

Section 6.3.8The results of the detection of the outliers

Tables 6.36-6.45 give the results from the detection of the outliers filter. With this filter, the firms are firstly grouped to be clean and suspected according to the previous filters, and then the firms in each group are examined respectively whether they have positive squared abnormal returns equal or greater than 3.5 or 4 multiplied by the standard error.

Table 6.36: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the U.S in 2006

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0601	-21 day	2.84***	None
	-8 day	2.69***	
	-3 day (3.5*SD)	2.49**	
UST0603	None	-	None
UST0604	-59 day	3.16***	None
UST0606	None	-	None
UST0608	None	-	None
UST0609	-34 day	4.48***	None
UST0610	-59 day	2.45**	None
UST0612	-13 day	1.84*	None
UST0613	None	-	None
UST0615	-52 day	3.24***	None
UST0616	None	-	-1 day
UST0618	-28 day	-	-3 day
UST0619	-24 day	3.83***	None
UST0620	None	-	None

Table 6.37: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.S in 2006

The suspected firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0602	-36 day	2.85***	None
	-25 day (3.5*SD)	2.43**	
UST0605	-9 day	6.60***	None
UST0607	-9 day	4.09***	None
UST0611	-48 day	2.72***	None
	-11 day	3.09***	
UST0614	None	-	None
UST0617	-38 day	2.74***	None
	-29 day	2.43**	

Table 6.38: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the U.S in 2007

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0701	None	-	None
UST0702	-38 day	2.03**	None
UST0703	-12 day	1.11	-1 day
UST0704	None	-	None
UST0705	-41 day	1.76*	None
	-1 day	2.24**	
UST0707	-29 day	0.72	None
UST0708	None	-	None
UST0709	-24 day	5.31***	None
UST0710	None	-	-28 day
UST0712	-54 day	1.54	None
UST0716	-47 day	2.33**	None
UST0720	None	-	None

Table 6.39: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.S in 2007

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0706	-15 day	2.34**	None

UST0711	-53 day	7.42***	None
	-11 day (3.5*SD)	5.51***	
UST0713	None	-	-9 day
UST0714	-15 day	2.51**	None
UST0715	-49 day	5.13***	None
UST0717	-24 day	5.79***	None
	-12 day (3.5*SD)	4.27***	
UST0718	-20 day	3.93***	None
UST0719	-7 day	45.93***	None

Table 6.40: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the U.S in 2008

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0801	None	-	None
UST0804	-34 day	1.59	None
UST0808	-10 day	1.14	None
UST0810	-52 day	3.65***	None
UST0812	-41 day	3.72***	-17 day
UST0814	None	-	None
UST0817	-23 day	1.50	None

Table 6.41: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.S in 2008

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0815	-22 day	5.13***	-3 day
UST0816	-7 day	1.70*	None
UST0819	-27 day	3.57***	None
	-24 day (3.5*SD)	2.94***	
UST0807	-23 day	9.98***	None
UST0803	None	-	None
UST0806	-8 day	9.53***	None
UST0802	-47 day	17.43***	-4 day
			-5 day
UST0818	None	-	None
UST0811	-1 day	5.64***	None
UST0813	-4 day	5.81***	None
UST0809	None	-	None
UST0805	-3 day	2.11**	None
	-43 day (3.5*SD)	2.43**	
UST0820	-13 day	7.17***	None

	-10 day	7.21***	
	-4 day (3.5*SD)	6.10***	

Table 6.42: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the U.S in 2009

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0901	None	-	None
UST0902	-19 day	2.50**	None
UST0904	-32 day	1.43	None
	-4 day (3.5*SD)	1.13	
UST0907	-47 day	1.33	None
	-2 day	1.24	
UST0908	None	-	None
UST0909	None	-	None
UST0910	-19 day	1.90*	None
UST0912	-43 day	1.74*	None
UST0913	None	-	None
UST0914	-14 day (3.5*SD)	1.23	-14 day
UST0915	-21 day	0.43	-27 day
UST0916	-59 day	1.66*	None
	-4 day	1.64	
UST0917	-52 day	2.78***	None
UST0918	None	-	None
UST0919	-45 day	3.22***	None
UST0920	-37 day	1.82*	None

Table 6.43: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.S in 2009

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST0903	None	-	-11 day
UST0905	-48 day	4.82***	None
UST0906	-1 day	7.30***	None
UST0911	-29 day	5.07***	None

Table 6.44: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the U.S in 2010

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST1002	None	-	None
UST1003	-60 day	2.83***	-41 day
			-5 day
			-3 day
UST1005	None	-	-15 day
UST1006	-49 day	3.49***	-1 day
	-44 day (3.5*SD)	2.78***	
UST1008	-23 day	1.92*	None
UST1009	None	-	None
UST1010	-13 day	1.22	None
	-48 day (3.5*SD)	1.45	
UST1011	-55 day	2.03**	None
	-5 day	1.99**	
UST1012	-35 day	1.94*	None
UST1013	-58 day	2.53**	None
UST1015	-14 day	1.71*	None
	-8 day	1.68*	
UST1017	None	-	None
UST1018	None	-	None
UST1020	-1 day	2.48**	None

Table 6.45: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in the U.S in 2010

The clean target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**	**Public rumours or Director buys share**
UST1001	-41 day	7.28***	None
UST1004	-1 day	7.18***	None
UST1007	-1 day	4.49***	None
UST1014	-12 day	9.61***	-1 day
UST1016	-44 day	8.08***	None
UST1019	None	-	None

Section 6.3.9The categorization after three filters-the dummy variable approach, the news search, and the detection of the outliers

After the first three filters- the dummy variable approach, the news search and the detection of the outliers, the U.S firms are categorized into five groups-the clean, the obscure, the obscure with lagged news, the suspected and the ultra-suspected.

Table 6.46: The codes of the absolute clean, obscure, obscure with lagged news suspected and ultra-suspected firms after three filters in the U.S from 2006 to 2010

2006							
The code of the absolute clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms		The code of the ultra-suspected firms	
UST0603	UST0620	None	None	UST0601	UST0614	UST0602	
UST0606				UST0604	UST0615	UST0605	
UST0608				UST0609	UST0618	UST0607	
UST0613				UST0610	UST0619	UST0611	
UST0616				UST0612		UST0617	
2007							
The code of the absolute clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms		The code of the ultra-suspected firms	
UST0701	UST0710	None	None	UST0702		UST0706	UST0718
UST0703	UST0712			UST0705		UST0711	UST0719
UST0704	UST0720			UST0709		UST0714	
UST0707				UST0716		UST0715	
UST0708				UST0713		UST0717	
2008							
The code of the absolute clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms		The code of the ultra-suspected firms	
UST0801		None	None	UST0803		UST0802	UST0813
UST0804				UST0809		UST0805	UST0815
UST0808				UST0810		UST0806	UST0816
UST0814				UST0812		UST0807	UST0819
UST0817				UST0818		UST0811	UST0820
2009							
The code of the absolute clean firms		The code of	The code of the	The code of the suspected firms		The code of the ultra-suspected firms	

		the obscure firms	obscure firms with lagged news			
UST0901	UST0913	None	UST0903	UST0902	UST0919	UST0905
UST0904	UST0914			UST0910	UST0920	UST0906
UST0907	UST0915			UST0912		UST0911
UST0908	UST0918			UST0916		
UST0909				UST0917		
2010						
The code of the clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms		The code of the ultra-suspected firms
UST1002	UST1018	None	None	UST1003	UST1013	UST1001
UST1005				UST1006	UST1015	UST1004
UST1009				UST1008	UST1019	UST1007
UST1010				UST1011	UST1020	UST1014
UST1017				UST1012		UST1016

Source: Author's summation

Section 6.3.10The Result of the Abnormal Turnover (AT) analysis

Here, I examine whether the daily average turnover calculated for two months (-60 to -11 trading days) prior to merger announcement and two weeks (-10 to -1 trading days) prior to the merger announcement gives any signal of presence of any possible insider trading. I use the average turnover calculated for a period from -180 to -61 day as the benchmark for average turnover in normal days. Then the daily average turnover for each firm is compared with 1.25 multiplied by the benchmark, 1.50 multiplied by the benchmark and 2.0 multiplied by the benchmark because of a gradual increasingly stringent standard.

Table 6.47: The result of the AT analysis in the U.S. from 2006 to 2010

2006			
	The firms with no difference between two means (benchmark*1.25)	The firms with no difference between two means (benchmark*1.5)	The firms with no difference between two means (benchmark*2.0)

The average of the turnover from -61day to -11day	None	None	UST0605, UST0607, UST0617
The average of the turnover from -10 day to 0 day	None	None	UST0602
2007			
The average of the turnover from -61day to -11day	None	None	UST0715
The average of the turnover from -10 day to 0 day	None	None	None
2008			
The average of the turnover from -61day to -11day	None	None	UST0819, UST0812
The average of the turnover from -10day to 0 day	None	None	None
2009			
The average of the turnover from -61day to -11 day	None	None	UST0902, UST0904
The average of the turnover from -10day to 0 day	None	None	UST0901
2010			
The average of the turnover from -61day to -11 day	None	None	None
The average of the turnover from -10day to 0 day	None	None	None

Source: Author's calculation

Similar to the results of the U.K, Table 6.47 shows that in a period from day -61 to -10, abnormal high turnovers which are at least 200% higher than the benchmark AT of some firms are seen. This is a sign that most possible cases of insider trading take place one or two months prior to the merger announcement.

Table 6.48: Distribution of firms with respect to percentage of AT increase (Benchmark: AT for a period from -180 to -61 day before announcement)

% High of AT	No. & % of firms with higher	No. & % of firms with higher

	AT from -61 to -11 day	AT from -10 to 0 day
2006		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	3 (15%)	1 (5%)
Total	3 (15%)	1 (5%)
2007		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	1 (5%)	0 (0%)
Total	1 (5%)	0 (0%)
2008		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	2 (10%)	0 (0%)
Total	2 (10%)	0 (0%)
2009		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	2 (10%)	1 (5%)
Total	2 (10%)	1 (5%)
2010		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	0 (0%)	0 (0%)
Total	0 (0%)	0 (0%)

Source: Author's calculation

Section 6.3.11The categorization after the dummy variable, the news search, the detection of the outliers and the analysis of the Abnormal Turnover (AT)

After the four filters- the dummy variable approach, the news search, the detect of the outliers, and the analysis of the AT, the U.S firms are categorized into six groups-the clean, the obscure, the obscure with lagged news, the suspected, the ultra-suspected and the ultra-ultra-suspected.

Table 6.49: The codes of the absolute clean, obscure, obscure with lagged news suspected ultra-suspected and ultra-ultra-suspected firms after four filters in the U.S from 2006 to 2010

2006					
The code of the absolute clean firms	The code of the	The code of the obscure	The code of the suspected firms	The code of the ultra-suspected	The code of the ultra-ultra-

		obscure firms	firms with lagged news			firms	suspected firms
UST0603	UST0620	None	None	UST0601	UST0615	UST0611	UST0605
UST0606				UST0604	UST0618		UST0607
UST0608				UST0609	UST0619		UST0617
UST0613				UST0610	UST0614		UST0602
UST0616				UST0612			
2007							
The code of the absolute clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
UST0701	UST0710	None	None	UST0702	UST0706	UST0719	UST0715
UST0703	UST0712			UST0705	UST0711		
UST0704	UST0720			UST0709	UST0714		
UST0707				UST0716	UST0717		
UST0708				UST0713	UST0718		
2008							
The code of the absolute clean firms	The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms	The code of the ultra-suspected firms			The code of the ultra-ultra-suspected firms
UST0801	None	None	UST0810	UST0815	UST0802		UST0819
UST0804			UST0803	UST0816	UST0811		
UST0808			UST0818	UST0807	UST0813		
UST0814			UST0809	UST0806	UST0805		
UST0817				UST0820	UST0812		
2009							
The code of the absolute clean firms		The code of the obscure firms	The code of the obscure firms with lagged news	The code of the suspected firms		The code of the ultra-suspected firms	The code of the ultra-ultra-suspected firms
UST0907	UST0915	None	UST0903	UST0901	UST0917	UST0905	None
UST0908	UST0918			UST0904	UST0919	UST0906	
UST0909				UST0910	UST0920	UST0902	
UST0913				UST0912		UST0911	
UST0914				UST0916			
2010							
The code of the clean firms		The code of	The code of the obscure	The code of the suspected firms		The code of the ultra-	The code of the ultra-ultra-

		the obscure firms	firms with lagged news			suspected firms	suspected firms
UST1002	UST1018	None	None	UST1003	UST1013	UST1001	None
UST1005				UST1006	UST1015	UST1004	
UST1009				UST1008	UST1020	UST1007	
UST1010				UST1011	UST1019	UST1014	
UST1017				UST1012		UST1016	

Source: Author's summation

Figures 6.26-6.30 present the AR of the six categories of firms in the U.S from 2006 to 2010.

Figure 6.26: The AR of the four categories of firms in the U.S 2006

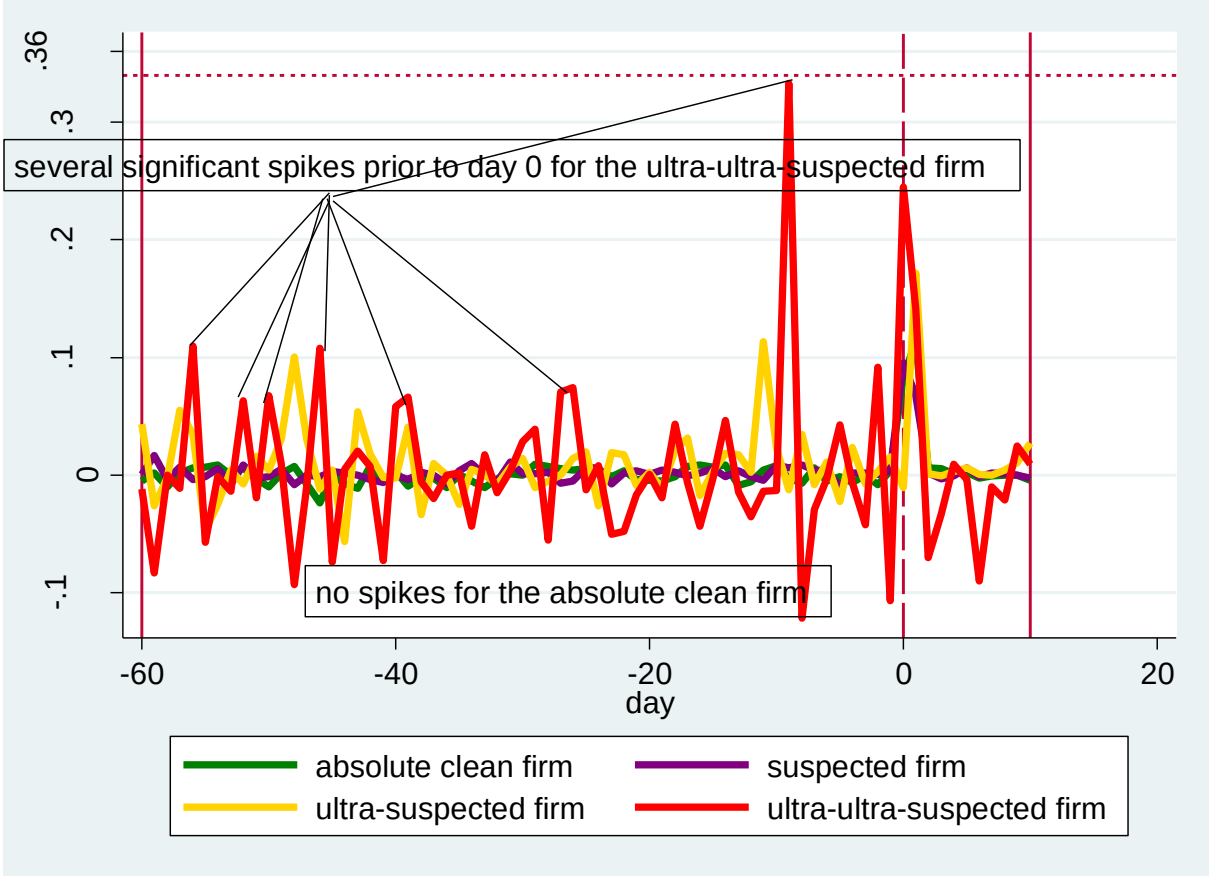
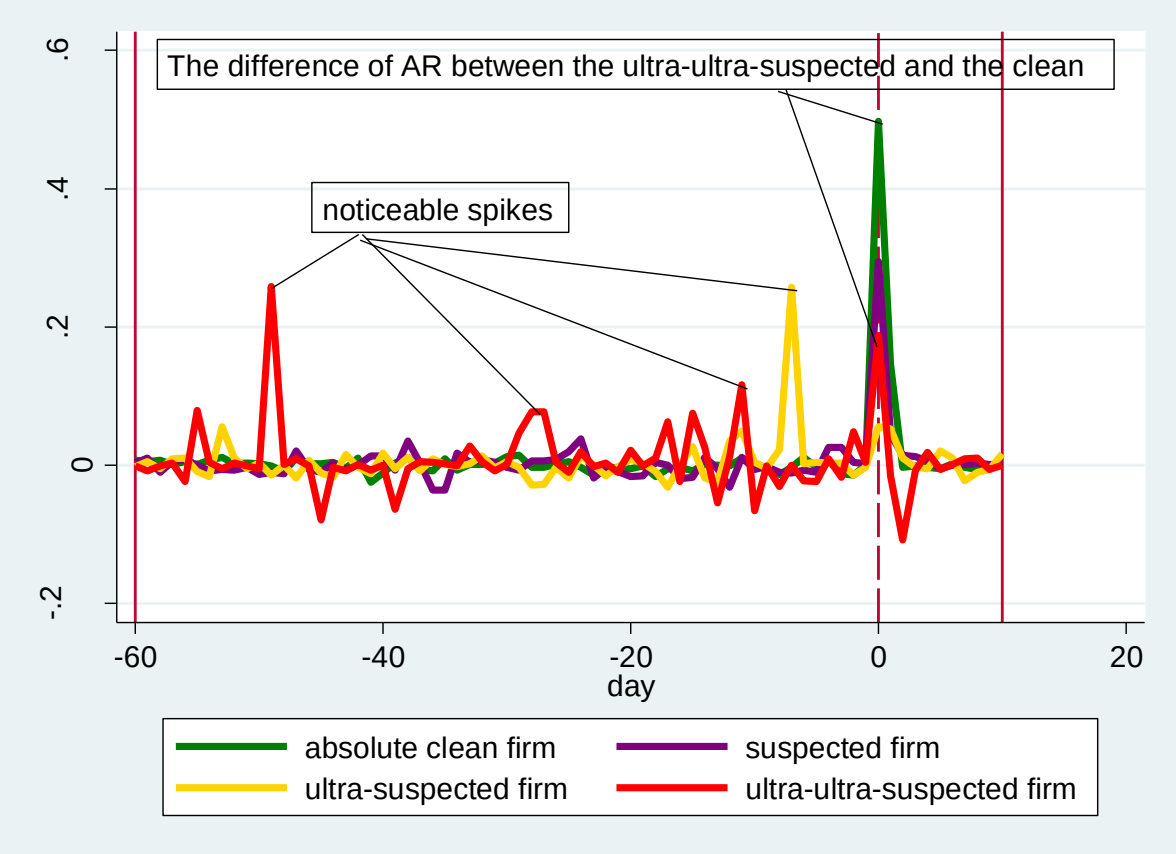


Figure 6.26 is the AR of the six categories of firms in the U.S 2006. Since in 2006, there is no obscure firm or obscure firm with lagged news, only four categories of firms are presented. According to Figure 6.31, the AR of the ultra-ultra-suspected firms has several significant spikes prior to the merger announcement. These spikes include both significant positive and significant negative ones. Likewise, the AR of the ultra-suspected firms also has significant positive spikes before merger

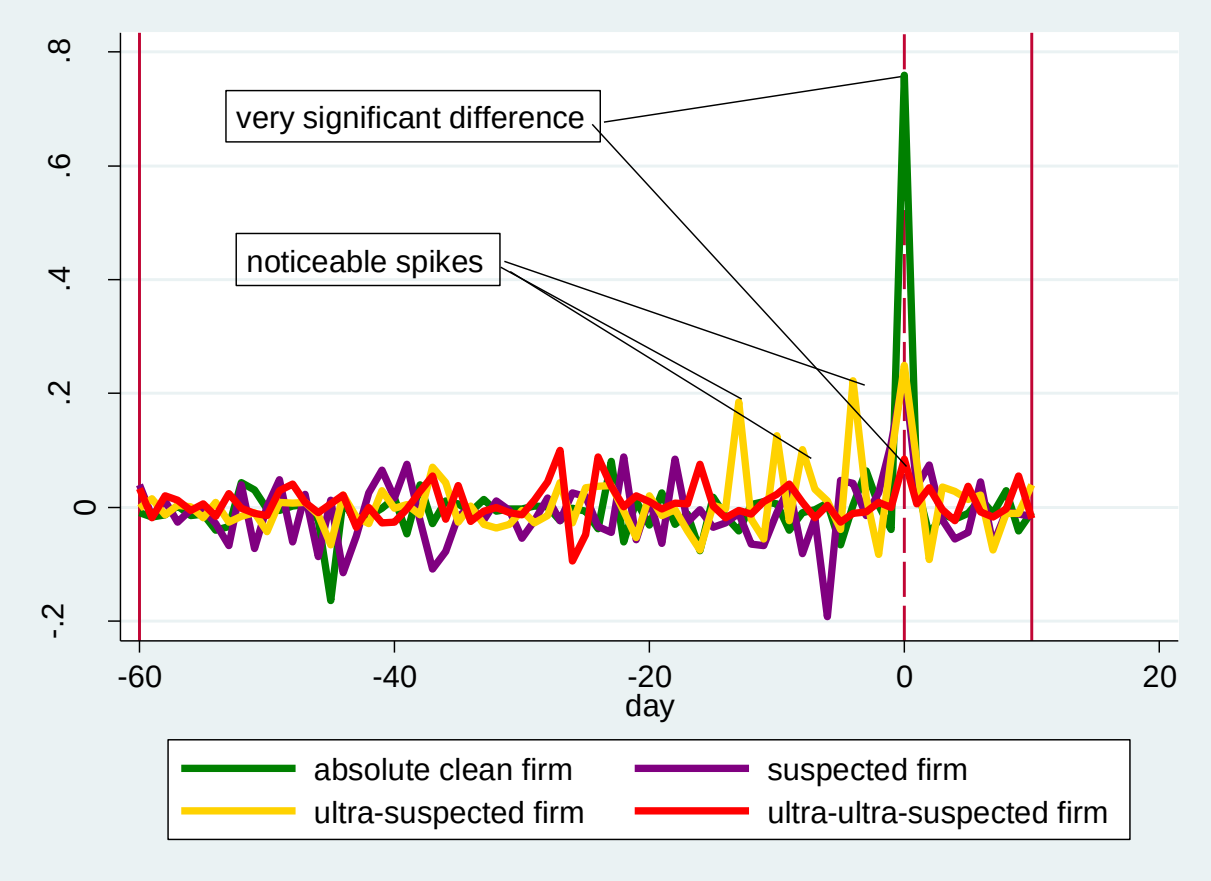
announcement. On the other hand, the AR of the suspected firm and the AR for the absolute clean firms are both stable all through the event window. However, on day 0, the AR of the ultra-ultra-suspected is the highest-about 25%. The CAARs of all the four categories are presented later for a further discussion of the effectiveness of the four-filter approach.

Figure 6.27: The AR of the four categories of firms in the U.S 2007



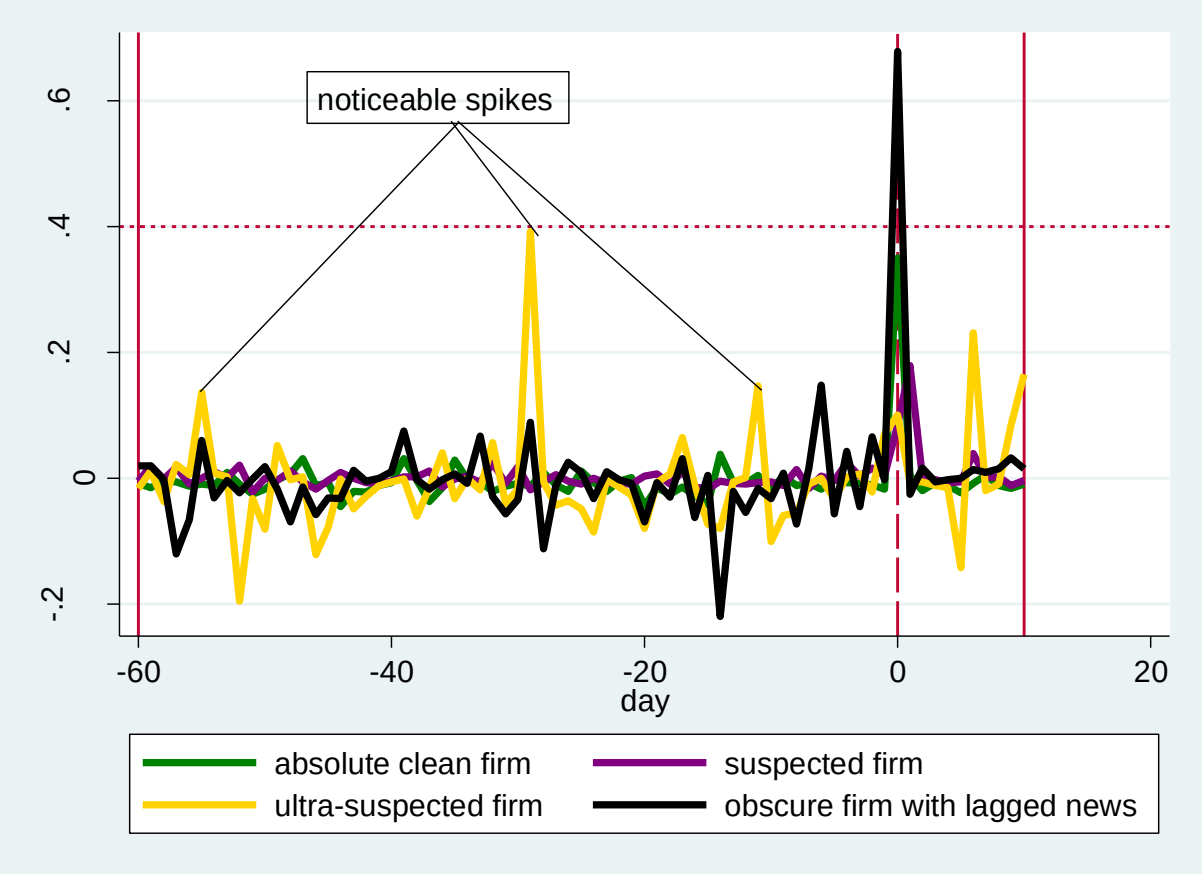
In 2007, the AR of the absolute clean firms is stable before merger announcement and moreover, on day 0, the absolute clean firms have the highest AR which is about 50%. The AR of the ultra-ultra-suspected firm has several significant positive spikes during a period from -60 to 0 day. The AR of the ultra-suspected has a significant positive spike on -10 day. On day 0, the ultra-suspected firms are getting the smallest AR-about 2%. There are also substantial differences between the ARs of the clean and the ultra-ultra-suspected, the ARs of the clean and the suspected and the ARs of the clean and the ultra-suspected.

Figure 6.28: The AR of the four categories of firms in the U.S 2008



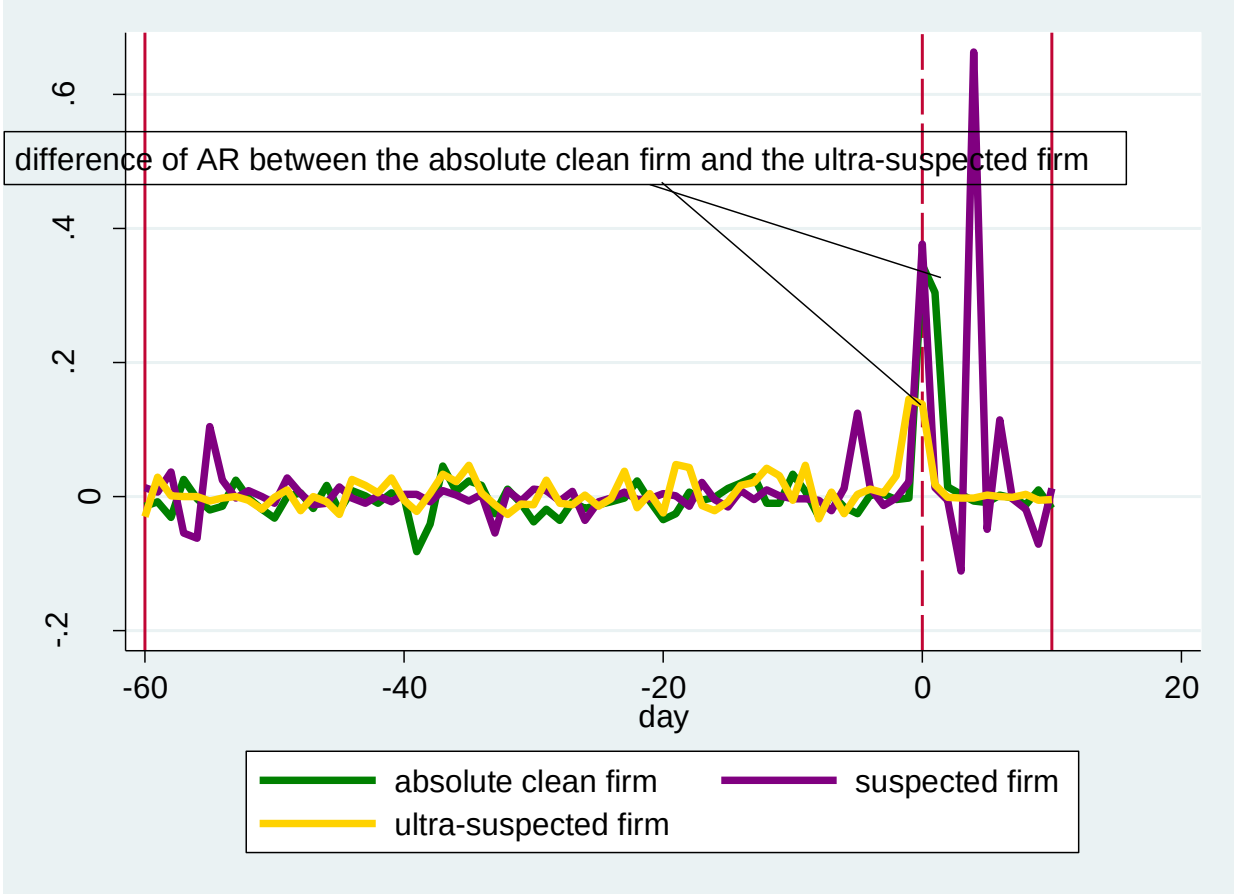
In 2008, there is no obscure firm or obscure firm with lagged news hence only four categories of firms are plotted. The AR of the absolute clean firm is stable before the merger announcement except one significant negative spike on day -45. The most significant spikes are observed on the AR of ultra-suspected firm from a period from day -20 to 0. It is noticeable that on day 0, the AR of the clean firms is the highest, reaching about 80% while the ARs of the other categories are comparatively lower. The difference between the AR of the clean and that of the ultra-ultra-suspected is quite substantial-about 75%.

Figure 6.29: The AR of the four categories of firms in the U.S 2009



In 2009, there is no ultra-ultra-suspected firm, however, there is obscure firm with lagged news. As a result, in 2009, four categories are plotted. The AR of the ultra-suspected firms has several significant spikes before merger announcement and the AR of the clean firms is stable. On day 0, the obscure firm with lagged news has the highest AR which is about 65% while the clean firms have the second highest-about 40%.

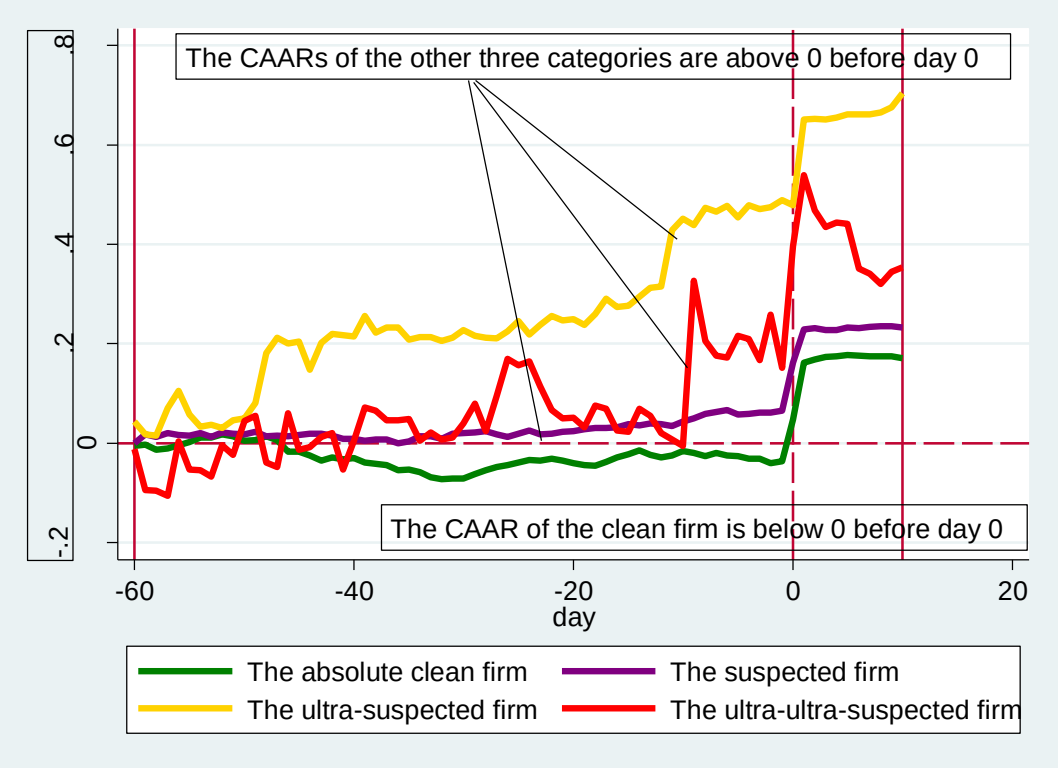
Figure 6.30: The AR of the four categories of firms in the U.S 2010



In 2010, there are only three categories-the absolute clean firm, the suspected firm and the ultra-suspected firm. The AR of the suspected firm has two noticeable spikes before merger announcement one of which appears on day -55 and the other one appears on day -5. The AR of the absolute clean firm and that of the ultra-suspected firm are both stable before day 0. On day 0, the clean firms have slightly lower AR than the suspected firms while the ultra-suspected firms have the lowest-about 10%.

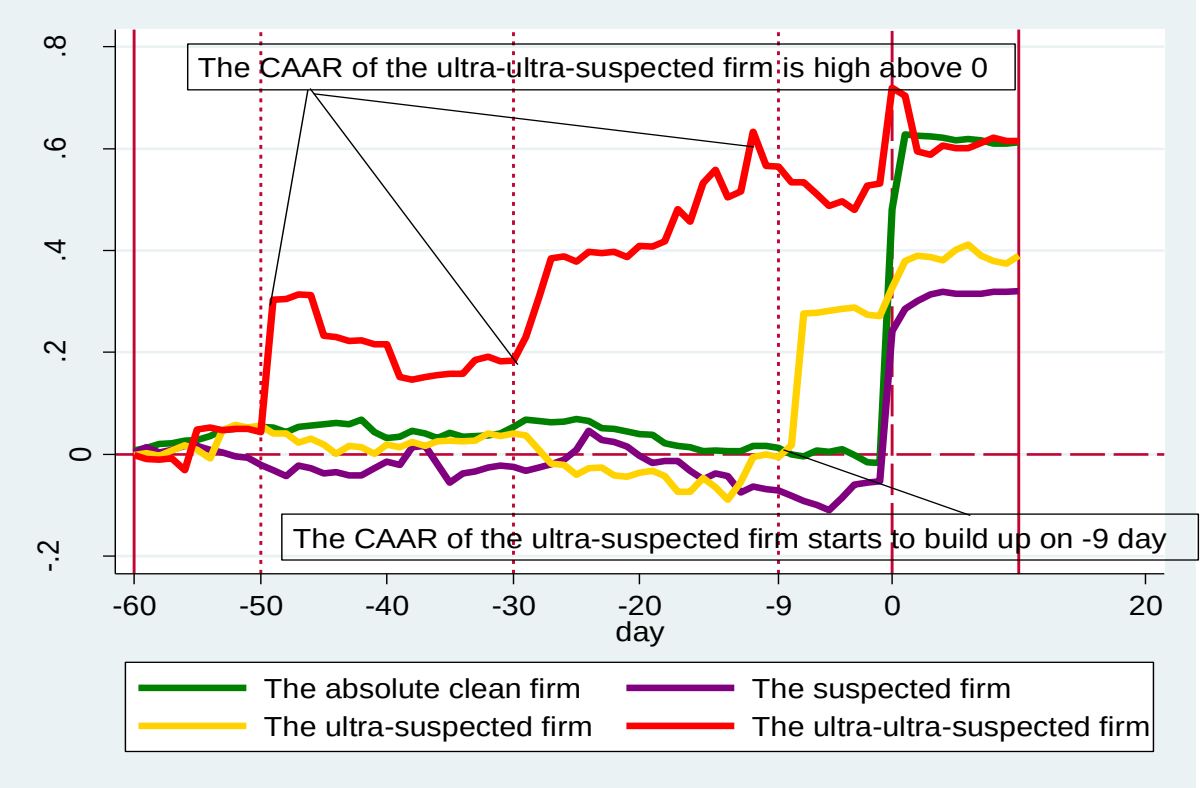
Figures 6.31-6.35 present the CAAR of the six categories-the absolute clean firm, the obscure firm, the suspected firm, the ultra-suspected firm and the ultra-ultra-suspected firm. According to the previous literature, if there is trading on inside information, the CAAR is expected to build up before the merger announcement.

Figure 6.31: The CAAR of the four categories of firms in the U.S 2006



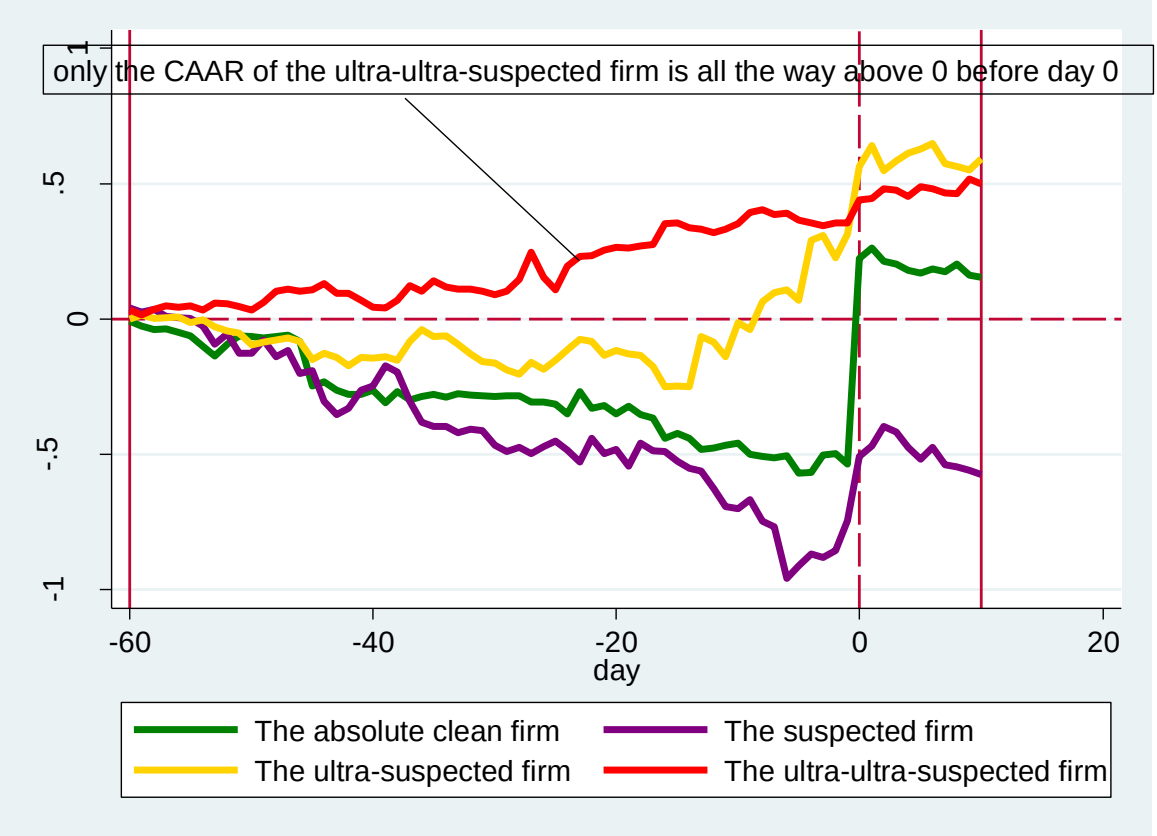
In Figure 6.31, only the CAAR of the absolute clean firm remain below zero before the merger announcement. The CAAR of the suspected firms starts to increase slowly from day -40 onwards. The CAAR of the ultra-suspected firm increases to 20% on day -45 and keeps on increasing slowly afterwards, and on day -15, it increases sharply to more than 40% and keeps at 40% before day 0. The increasing trend in the CAAR of the ultra-ultra-suspected firms is observed on day -15 on which it goes up dramatically to 30% and then nothing before merger announcement. The evidences of both the AR and the CAAR support the effectiveness of the four-filter approach through which the firms are categorized properly.

Figure 6.32: The CAAR of the four categories of firms in the U.S 2007



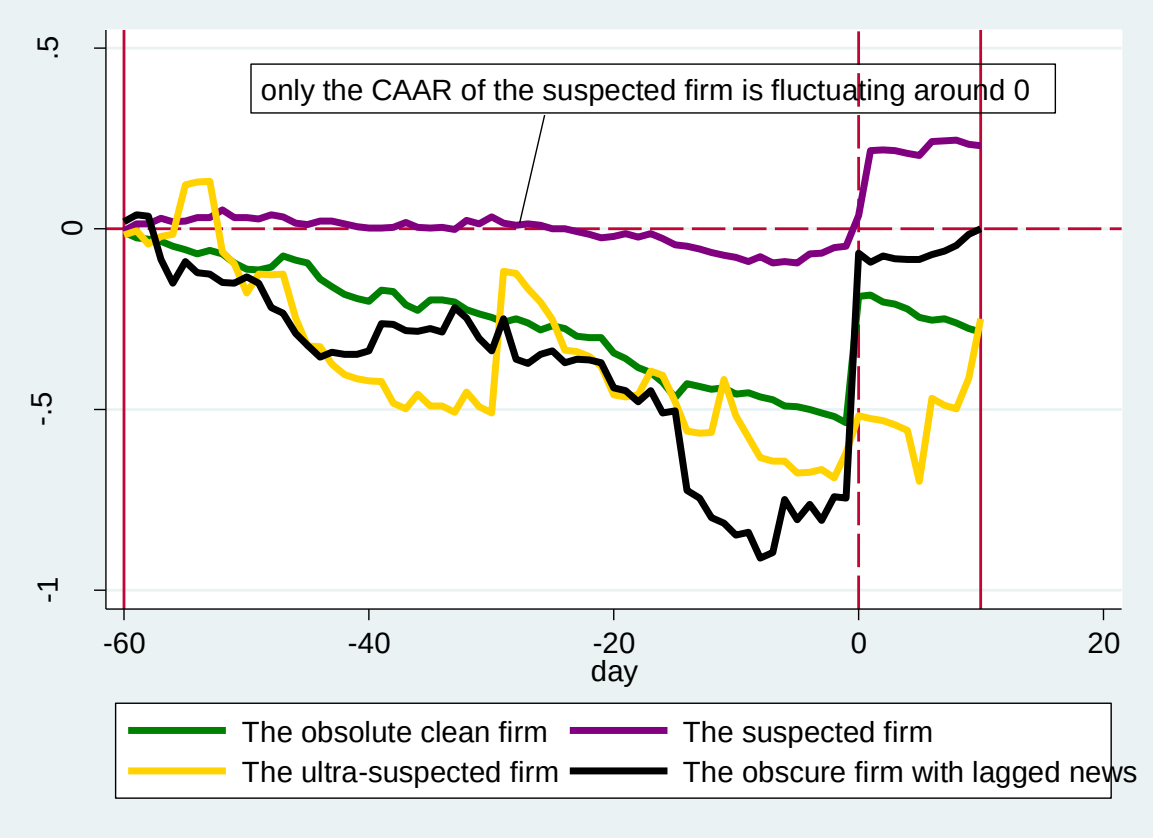
According to Figure 6.32, the CAAR of the suspected firm remains stable before day -5. However, an increasing trend of CAAR buildup can be observed from day -5 onwards. The CAAR of the ultra-suspected firm starts to build up on day -9. The CAAR of the ultra-ultra-suspected firm increases considerably to 30% on day -50 and again to 40% on day -30 after which it remains increasing steadily to more than 60% before merger announcement. On the other hand, the CAAR of the clean firms remain stable about 0 before merger announcement and no buildup is observed.

Figure 6.33: The CAAR of the four categories of firms in the U.S 2008



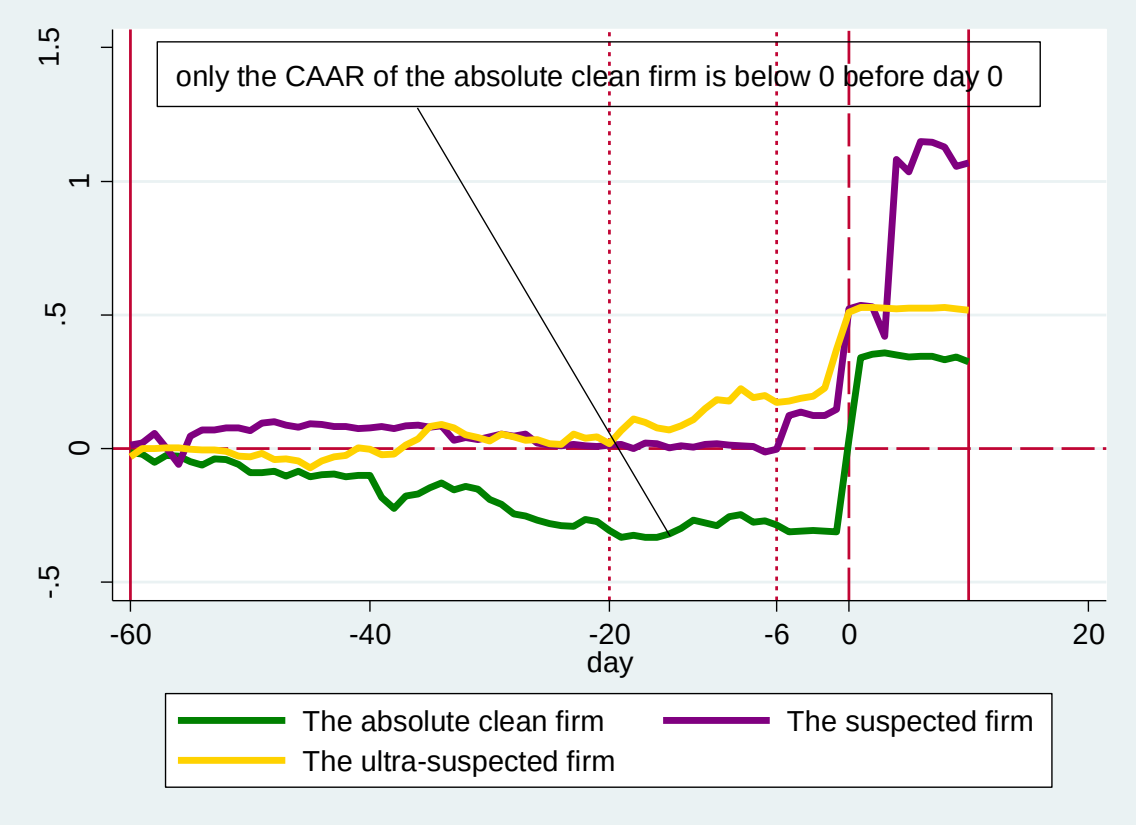
According to Figure 6.33, in the year 2008 in which the economic crisis happens, only the CAAR of the ultra-ultra-suspected firms remains increasing steadily from day -60 onwards. It is noticeable that the CAAR of the ultra-ultra-suspected firms is above 0 all through the event window. The CAAR of the ultra-suspected firms remains below 0 before day -20 after which an increasing trend is observed. The CAAR of the absolute clean firm decreases gradually to about -50% before merger announcement. Only the CAAR of the suspected firm ends up negative on day 0. However, an increasing trend is also observed on day -7.

Figure 6.34: The CAAR of the four categories of firms in the U.S 2009



According to Figure 6.34, in the year 2009, only the CAAR of the suspected firm ends up positive on day 0. Before day -10, the CAAR of the suspected firm remains very close to 0 and from day -10 onwards, an increasing trend can be observed. For the CAARs of other categories, they all decrease sharply. However, the CAAR of the obscure firm with lagged news starts to increase on day -7 and an increasing trend is seen for the CAAR of the ultra-suspected firm from day -3 onwards. For the ultra-suspected firms, a spike can be seen on day -30, it is arguably that if there is evidence of insider trading on day -30, then the insiders got it wrong as the price on day 0 was virtually the same as prior to the insider trading. This is evidence that other things affect stock prices and the insider trading does not always profit. Among all the categories, only the CAAR of the absolute clean firm starts to increase sharply on day 0. Before the merger announcement, there is no sign of CAAR buidup for the clean firms.

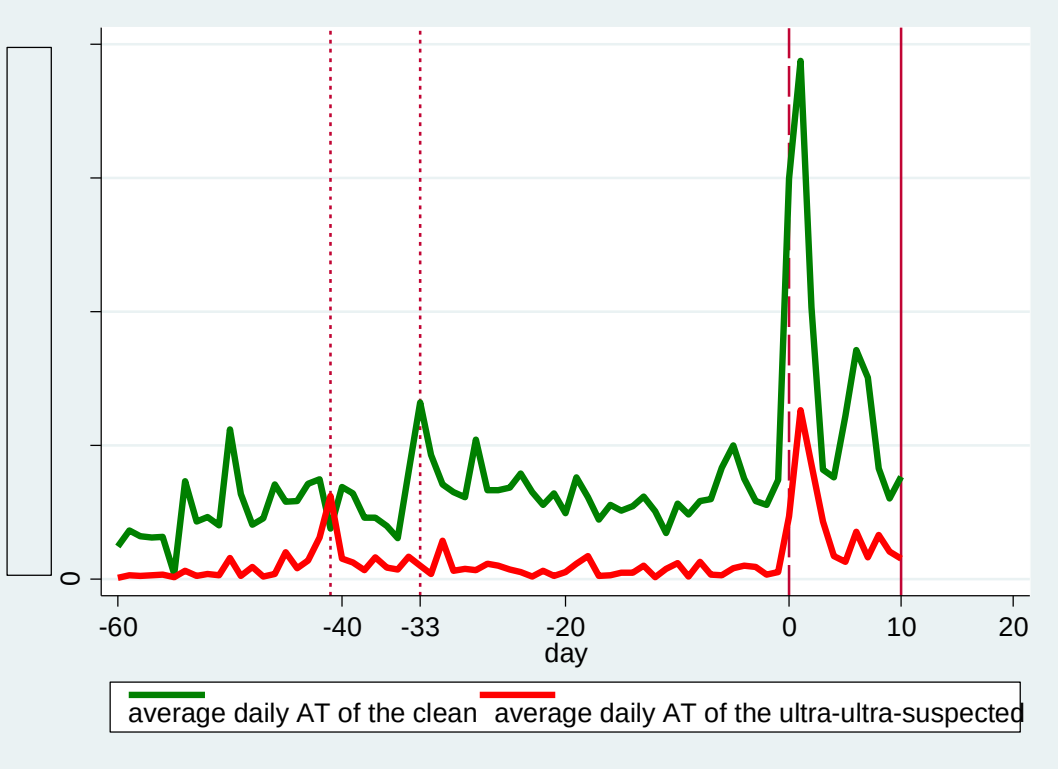
Figure 6.35: The CAAR of the four categories of firms in the U.S 2010



According to Figure 6.35, an increasing trend of CAAR buildup is observed from day -20 onwards for the ultra-suspected firms, though with occasional dips. From day -6, the CAAR buildup for the ultra-suspected firms is more rapid than before. The CAAR of the suspected firms begins to increase on day -6 before which it is relatively stable. The CAAR of the absolute clean firms decreases gradually to -25% before merger announcement and starts to increase on day 0.

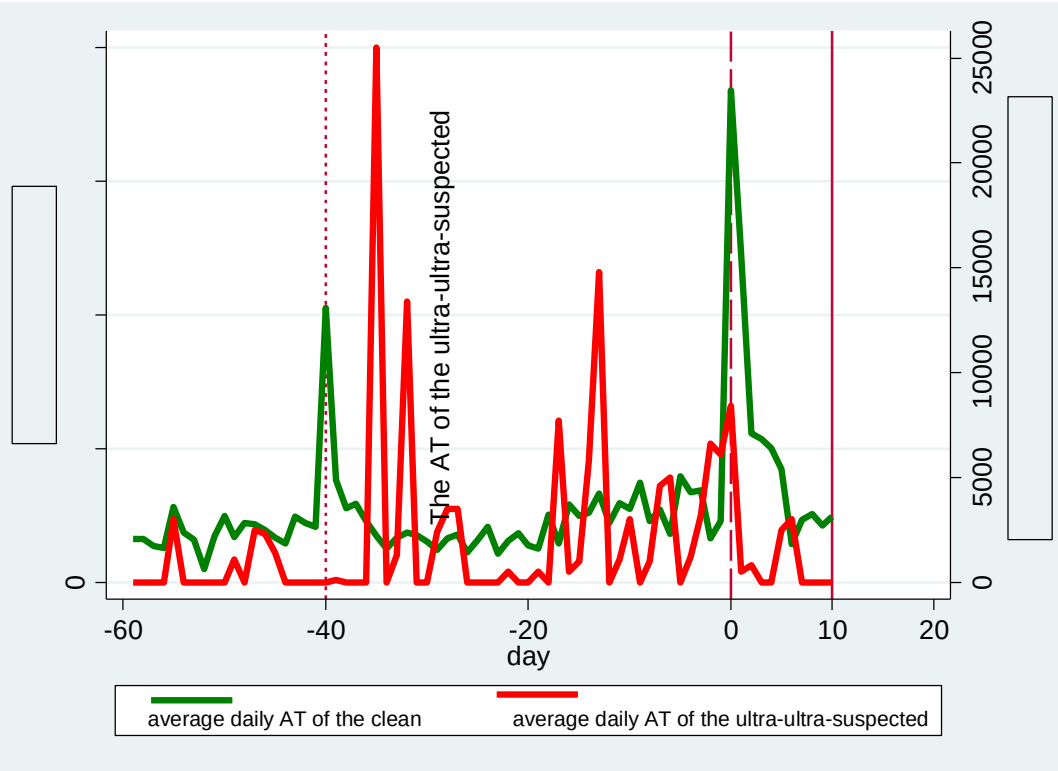
Figures 6.36-6.40 give the AT of the clean and the ultra-ultra-suspected firms in the U.S from 2006 to 2010.

Figure 6.36: The AT of the clean and the ultra-ultra-suspected firms in the U.S 2006



According to Figure 6.36, the AT of the clean firms is above that of the ultra-ultra-suspected firms. On day -40, the AT of the ultra-ultra-suspected firms has a spike and within a period from day -60 to -40 and on day -33, the AT of the clean firms has several spikes. In other words, both the clean and the ultra-ultra-suspected firms have pre-merger abnormal run-up of the AT. As a result, the analysis of the AT must be accompanied by other methods to filter the possible insider trading activities before merger.

Figure 6.37: The AT of the clean and the ultra-ultra-suspected firms in the U.S 2007



According to Figure 6.37, the average daily AT of the ultra-ultra-suspected firms is much smaller than that of the clean firms due to the thin trading volume of Firm UST0715 which is the only ultra-ultra-suspected firm in 2007. However, the AT of the Firm UST0715 still has several noticeable spikes despite of its low trading volume. Like the result in 2006, the AT of the clean firms in 2007 also has a spike on day -40.

Figure 6.38: The AT of the clean and the ultra-ultra-suspected firms in the U.S 2008

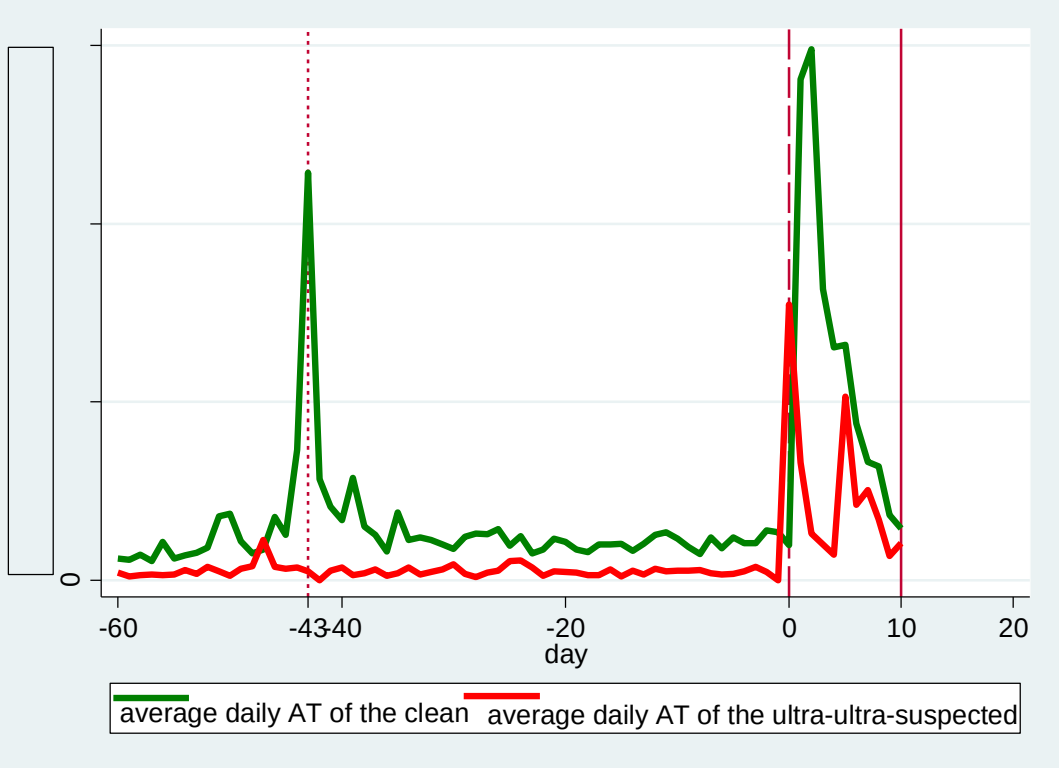
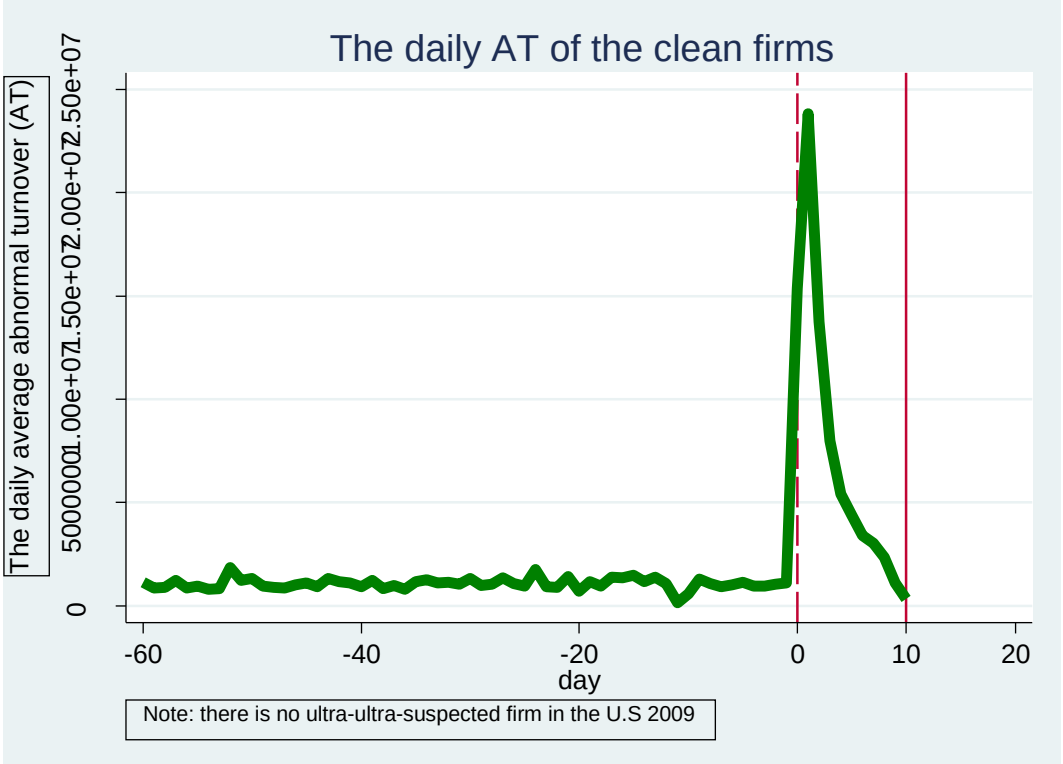
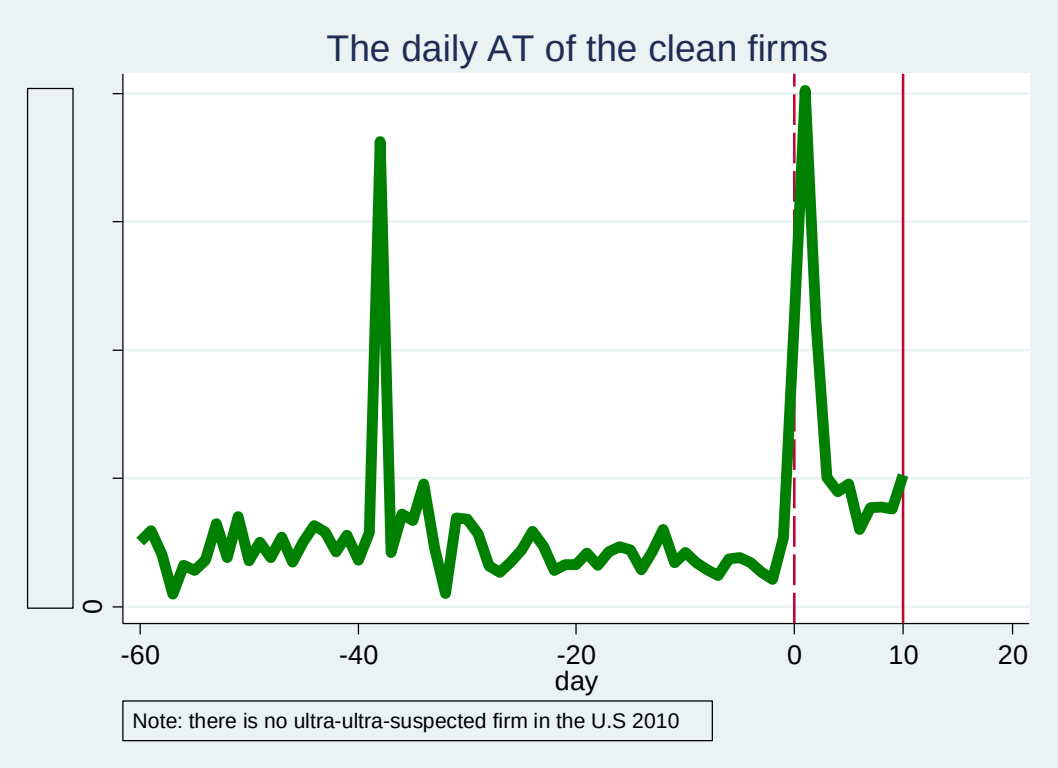


Figure 6.39: The AT of the clean and the ultra-ultra-suspected firms in the U.S 2009



According to Figure 6.39, in 2009, there is no ultra-ultra-suspected firm and therefore only the AT of the clean firms is plotted. The AT of the clean firms does not have spikes before the merger announcement.

Figure 6.40: The AT of the clean and the ultra-ultra-suspected firms in the U.S 2010



According to Figure 6.40, there is no ultra-ultra-suspected firm in 2010 and for the absolute clean firms, the AT has a significant spike on day -40 and several other spikes before merger announcement.

Section 6.3.12The results of Granger causality test in the targets and the bidders

Tables 6.50-6.54 show the results of Granger causality test for the targets and bidders in pairs in the U.S from 2006 to 2010. Tables 6.76-6.80 in the appendix give the results of the Augmented Dicky-Fuller (ADF) test for the targets and bidders in the U.S from 2006 to 2010. The results show that all the targets and bidders are stationary.

Table 6.50: Granger causality test in the targets and bidders in U.S 2006

Target/status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
UST0601/suspected	No	2.27	No	0.30
UST0602/ultra-ultra-suspected	Yes (5%)	3.37	No	0.07
UST0603/clean	No	0.23	No	0.42
UST0604/suspected	No	1.03	No	0.30
UST0605/ultra-ultra-suspected	No	0.75	No	1.48
UST0606/clean	No	0.27	No	0.02
UST0607/ultra-ultra-suspected	No	1.08	No	0.33
UST0608/clean	No	1.19	No	1.57
UST0609/suspected	No	0.08	Yes (1%)	6.65
UST0610/suspected	No	0.72	No	0.32
UST0611/ultra-suspected	No	0.40	No	0.66
UST0612/suspected	Yes (10%)	2.54	Yes (5%)	3.95
UST0613/clean	No	0.04	No	0.44
UST0614/suspected	No	0.14	No	0.14
UST0615/suspected	No	0.38	No	0.57
UST0616/clean	No	1.02	Yes (10%)	2.44
UST0617/ultra-ultra-suspected	Yes (1%)	5.33	No	0.32
UST0618/suspected	No	0.00	No	0.10
UST0619/suspected	No	2.03	No	0.08
UST0620/clean	No	1.33	No	0.59

Source: Author's calculation

Table 6.51: Granger causality test in the targets and bidders in U.S 2007

Target/status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
UST0701/clean	Yes (10%)	2.84	No	1.69
UST0702/suspected	No	0.61	No	1.27
UST0703/clean	No	0.10	No	0.87
UST0704/clean	No	1.59	No	2.10
UST0705/suspected	No	1.47	No	1.41
UST0706/ultra-suspected	No	0.75	No	0.36
UST0707/clean	No	1.66	Yes (10%)	3.02
UST0708/clean	No	1.02	No	0.03
UST0709/suspected	No	0.85	No	0.85
UST0710/clean	No	1.66	No	0.71
UST0711/ultra-suspected	No	0.51	No	0.02
UST0712/clean	No	0.38	Yes (1%)	5.51
UST0713/suspected	Yes (5%)	3.35	Yes (5%)	3.50
UST0714/ultra-suspected	No	0.41	Yes (5%)	3.90
UST0715/ultra-ultra-suspected	No	0.88	No	1.76
UST0716/suspected	No	0.16	No	0.75
UST0717/ultra-suspected	No	1.57	No	1.91

UST0718/ultra-suspected	No	0.24	No	1.18
UST0719/ultra-suspected	No	0.01	No	1.50
UST0720/clean	No	0.02	No	0.70

Source: Author's calculation

Table 6.52: Granger causality test in the targets and bidders in U.S 2008

Target/status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
UST0801/clean	No	1.93	Yes (1%)	4.81
UST0802/ultra-suspected	No	0.44	No	0.03
UST0803/suspected	No	1.39	No	1.61
UST0804/clean	No	0.23	No	0.10
UST0805/ultra-suspected	No	0.11	No	1.51
UST0806/ultra-suspected	Yes (1%)	11.04	No	1.20
UST0807/ultra-suspected	Yes (1%)	15.68	No	1.30
UST0808/clean	No	0.30	No	0.06
UST0809/suspected	No	1.92	Yes (1%)	11.78
UST0810/suspected	No	0.92	No	0.12
UST0811/ultra-suspected	No	0.42	Yes (5%)	4.42
UST0812/ultra-suspected	Yes (10%)	2.74	Yes (1%)	6.33
UST0813/ultra-suspected	No	0.38	No	0.41
UST0814/clean	Yes (1%)	4.83	No	0.81
UST0815/ultra-suspected	No	2.11	Yes (10%)	2.35
UST0816/ultra-suspected	No	0.08	No	1.42
UST0817/clean	No	1.93	Yes (1%)	4.81
UST0818/suspected	No	1.75	No	2.21
UST0819/ultra-ultra-suspected	No	2.00	No	0.96
UST0820/ultra-suspected	Yes (10%)	2.40	Yes (10%)	2.73

Source: Author's calculation

Table 6.53: Granger causality test in the targets and bidders in U.S 2009

Target/status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
UST0901/suspected	No	2.11	Yes (5%)	3.23
UST0902/ultra-suspected	No	0.05	No	0.19
UST0903/obscure with lagged news	No	0.73	No	0.55
UST0904/suspected	No	1.25	No	0.45
UST0905/ultra-suspected	No	0.76	No	0.58
UST0906/ultra-suspected	No	0.59	No	0.51
UST0907/clean	Yes (10%)	2.38	No	0.85
UST0908/clean	No	0.09	No	0.06
UST0909/clean	No	0.45	No	1.35
UST0910/suspected	No	0.45	No	2.01
UST0911/ultra-suspected	No	0.06	No	0.59
UST0912/suspected	No	0.05	No	0.23

UST0913/clean	Yes (10%)	2.88	Yes (5%)	4.30
UST0914/clean	No	0.78	No	1.35
UST0915/clean	No	0.07	No	0.78
UST0916/suspected	No	1.49	No	1.56
UST0917/suspected	No	0.13	Yes (5%)	4.04
UST0918/clean	No	1.22	No	0.70
UST0919/suspected	No	0.05	No	0.53
UST0820/suspected	No	0.44	No	1.19

Source: Author's calculation

Table 6.54: Granger causality test in the targets and bidders in U.S 2010

Target/status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
UST1001/ultra-suspected	No	1.21	No	0.11
UST1002/clean	No	0.42	No	1.52
UST1003/suspected	No	0.30	No	0.59
UST1004/ultra-suspected	No	0.05	No	0.42
UST1005/clean	No	0.63	No	1.67
UST1006/suspected	No	1.34	No	1.46
UST1007/ultra-suspected	No	2.01	Yes (5%)	3.32
UST1008/suspected	No	0.79	No	1.65
UST1009/clean	No	1.27	No	0.83
UST1010/clean	No	0.07	No	0.56
UST1011/suspected	No	0.35	No	0.13
UST1012/suspected	No	0.25	No	1.66
UST1013/suspected	Yes (1%)	5.43	No	2.17
UST1014/ultra-suspected	No	1.06	No	1.61
UST1015/suspected	No	0.28	Yes (5%)	3.57
UST1016/ultra-suspected	No	0.12	No	1.30
UST1017/clean	No	0.99	No	0.70
UST1018/clean	No	1.01	No	0.18
UST1019/suspected	No	0.75	No	0.74
UST1020/suspected	No	0.83	No	1.70

Source: Author's calculation

Table 6.55: The descriptive statistics of the result of the Granger causality test in U.S

Descriptive statistic		
Numbers of target firms Granger cause bidder firms (10%)[30]		Numbers of bidder firms Granger cause target firms (10%)
2006	1/20[31]	1/20

[30] The percentage number in the parentheses is the significance level of the Granger causality test.

[31] The denominator is the total number of firms in that specific year.

2007	1/20	1/20
2008	3/20	2/20
2009	0/20	2/20
2010	0/20	0/20
Total	5/100	6/100
Numbers of target firms Granger cause bidder firms (5%)		Numbers of bidder firms Granger cause target firms (5%)
2006	1/20	1/20
2007	2/20	1/20
2008	1/20	0/20
2009	3/20	0/20
2010	2/20	0/20
Total	9/100	2/100
Numbers of target firms Granger cause bidder firms (1%)		Numbers of bidder firms Granger cause target firms (1%)
2006	1/20	1/20
2007	1/20	0/20
2008	3/20	3/20
2009	0/20	0/20
2010	0/20	1/20
Total	5/100	5/100

Source: Author's summation

According to the results of Granger causality test, there is evidence that the targets Granger cause the bidders, and the bidders Granger cause the targets and mutual causality. I found the most prevalent cases happen on the suspected, the ultra-suspected and the clean firms. Among the total 13 cases on the bidders Granger cause the targets, 4 of which are clean firms, 3 are suspected firms, 4 are ultra-suspected firms and 2 are ultra-ultra-suspected firms. On the other hand, there are 18 cases of the targets Granger cause the bidders, 6 of which are clean firms, 7 are suspected firms and 5 are ultra-suspected firms.

Table 6.56: The summary of the Granger causality test in the U.S firms

The direction of Granger causality	Absolute clean	Obscure	Obscure with lagged news	Suspected	Ultra-suspected	Ultra-ultra-suspected
Bidder → Target	4	0	0	3	4	2
Target → Bidder	6	0	0	7	5	0

Section 6.3.13The results of the application of the day 0 hypothesis

In this chapter, the day 0 hypotheses is tested to provide evidence that the insider dealing activity has absorbed part of the abnormal return on day 0 and as a result, the firms which are suspected to have traded with inside information will have a comparatively lower excess return on day 0 than the clean firms. In addition to the day 0 return, the ratio of the increase on day 0 to that from day -60 to day 0 is also included.

Table 6.57: The results of the day 0 hypothesis after four filters[32]

Year	The absolute clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	0.083715	-	-	0.0957496	-0.0106942	0.2446426
2007	0.4978723	-	-	0.2940957	0.0558327	0.1870548
2008	0.7592605	-	-	0.2373422	0.2499221	0.0850869
2009	0.3495395	-	0.6776646	0.0838218	0.1007806	-
2010	0.3457057	-	-	0.3762397	0.1383411	-
Average	0.407219	-	0.6776646	0.21745	0.106836	0.172261

Source: Author's calculation

Table 6.58: The results of the day 0 hypothesis in ratio after four filters[33]

Year	The absolute clean firms	The obscure firms	The obscure firms with lagged news	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	234.3%	-	-	145.6%	-2.2%	160.6%
2007	306.0%	-	-	559.5%	20.6%	35.2%
2008	141.4%	-	-	31.9%	79.8%	24.0%
2009	65.1%	-	91.1%	178.8%	16.3%	-
2010	111.1%	-	-	258.0%	37.2%	-
Average	172%	-	91.1%	235%	30%	73%

Source: Author's calculation

[32] The numbers in Table 6.57 are the average AR for all the six categories of firms on day 0 from 2006 to 2010. For example, in 2006, there are 6 absolute clean firms, and the number 0.083713 is the average AR of these 6 firms on day 0. The last column 'Average' is the average value from 2006 to 2010 for each of the six categories.

[33] The percentage numbers in Table 6.58 are calculated as the difference of the CAAR on day 0 and the CAAR on day -1 over the CAAR on day 0. Ratio $= \frac{CAAR_0 - \mathrm{CAAR}_{-1}}{CAAR_0} * 100\%$

According to Table 6.57, the only exception which is not in line with the day 0 hypothesis is the year 2006. However, if comparing the day 0 AR of the clean firms with that of the ultra-suspected firms, the empirical result of the day 0 hypothesis is supported by all five years. Furthermore, it is also noticeable that the most substantial difference is between the day 0 AR of the clean and that of the ultra-suspected instead of the ultra-ultra-suspected. The difference between the ultra-suspected and the ultra-ultra-suspected firms is that the latter have AT before the merger announcement. Presumably it is because of the sizes of the firms as for the smaller firms with a lower trading volume on a normal day, ATs are easier to be observed. However, because the targets are the firms which have been taken over, it is difficult to find out information about their sizes to verify. Table 6.58 provides a support for the day 0 hypothesis in which the ratio of the day 0 increase of the share prices to that from day -60 to day 0. According to Table 6.58, the ratio of day 0 share increase for the absolute clean firms is the highest among all categories. The evidence of day 0 hypothesis has supported the assumption that on day 0, with the existence of insider trading, the AR would be, at least partly, absorbed prior to merger announcement. It is also worth emphasising that the results of the day 0 hypothesis are very similar to the U.K results. The key differences lie between absolute clean and the ultra-ultra-suspected firms. This is suggestive that the four filter approach works.

Table 6.59: Test for Equality of Means between Series

Method	Degree of freedom	Value	Probability
t-test	98	3.887555	0.0002
Anova F-test	(1, 98)	15.11309	0.0002
Satterthwaite-Welch-test	75.27871	-3.887555	0.0002
Welch F-test	(1, 75.2787)	15.11309	0.0002

Source: Author's calculation

In applying test for equality of means between series, t-test, Anova, F-test Satterthwaite-Welch test and Welch F-test all suggest highly significance (under 5% significance level).

Table 6.60: Test for Equality of variance between Series

Method	Degree of freedom	Value	Probability

F-test	(49, 49)	3.438424	0.0000
Bartlett	1	17.42744	0.0000

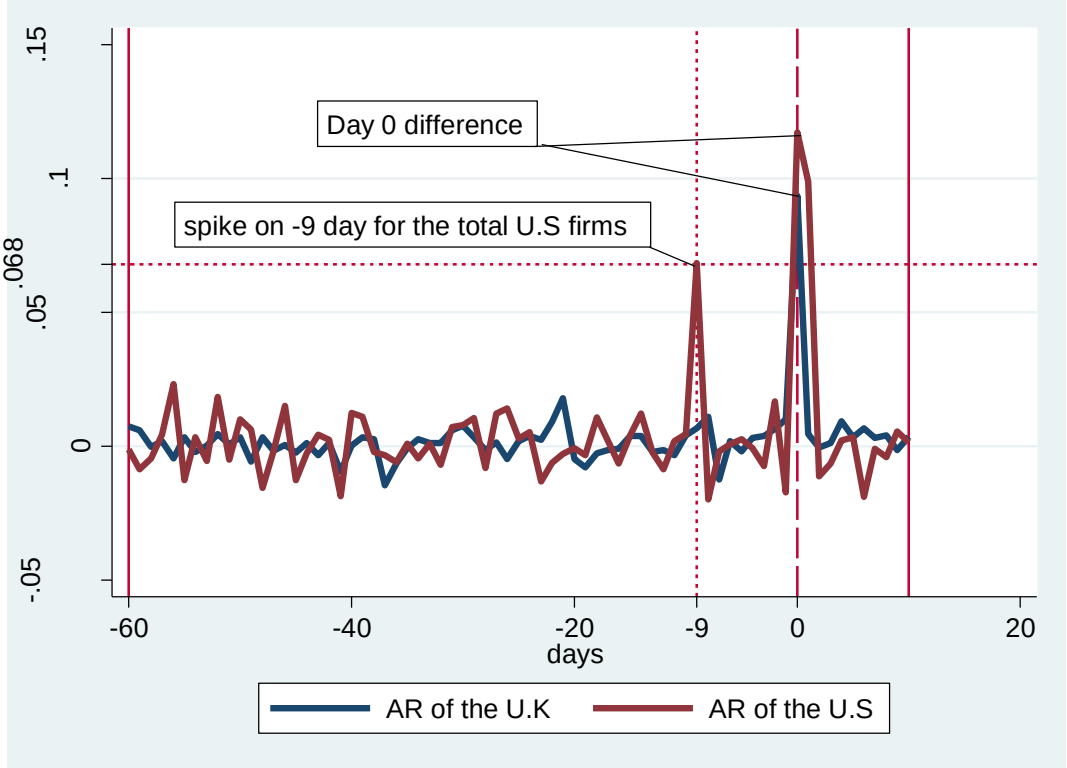
Source: Author's calculation

The above table shows in applying both F-test and Bartlett test, it is proved that the result of the day 0 hypotheses is significant at the 1% significance level.

Section 6.4 A comparison of the U.K and U.S results

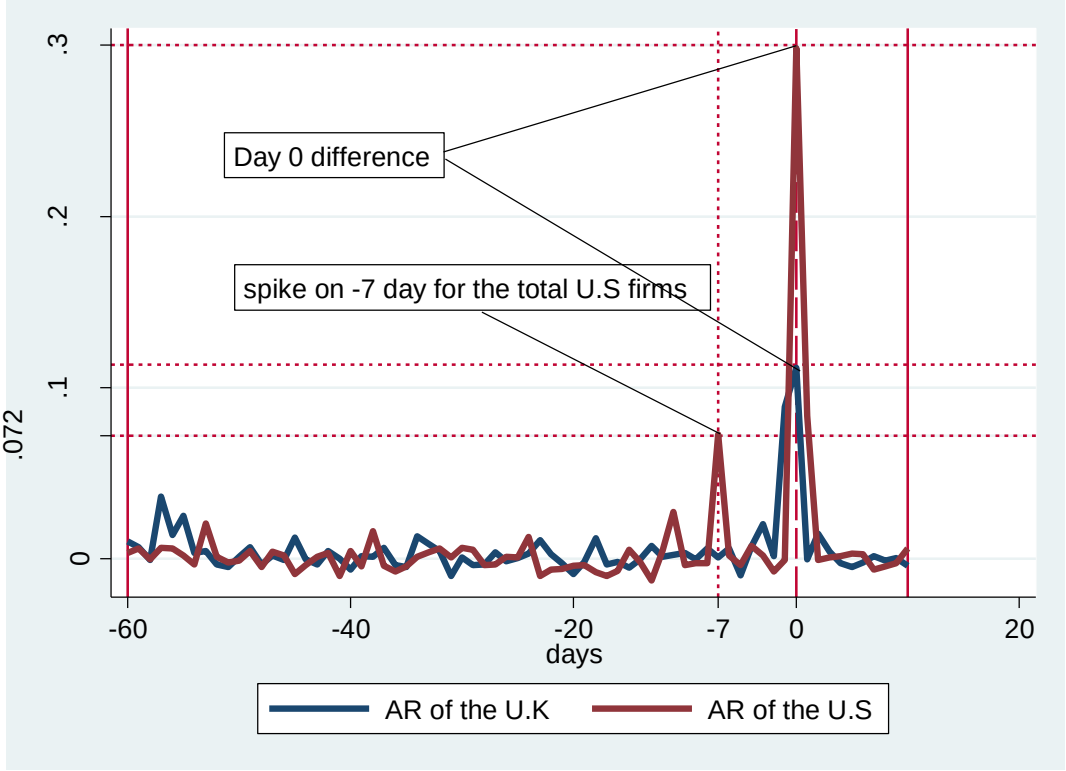
As mentioned in Chapter 2 Section 2.4.2 the regulation of insider trading, the U.K definition is argued to be superior in form to that defined by the U.S law (Tridimas, 1991; Watson, 1995). Fidrmuc, Goergen and Renneboog (2005) conclude that the observed abnormal returns in the U.K are found to be larger than those in the U.S and they attribute this to the differences in regulation between the two countries. Figures 6.41-6.45 are presented to show the AR of the U.K and U.S target firms from 2006 to 2010.

Figure 6.41: The AR of the U.K and U.S target firm 2006



According to Figure 6.41, the AR of the U.S target firms has a significant spike on day -9 while that of the U.K firms is comparatively more stable. However, on day 0, the AR of the U.S firms is higher than that of the U.K and according to the day 0 hypothesis, this is an indication that insider trading is more of a problem in the U.K than in the U.S because the AR is absorbed partly before the merger announcement.

Figure 6.42: The AR of the U.K and U.S target firm 2007



In 2007, the AR of the U.S has several spikes before day 0 among which the most significant one appears on day -7. Nevertheless, on day 0, the difference between the AR of the U.K and that of the U.S is quite substantial. The AR of the U.S has reaches about 30% while that of the U.K ends up at slightly greater than 10%.

Figure 6.43: The AR of the U.K and U.S target firm 2008

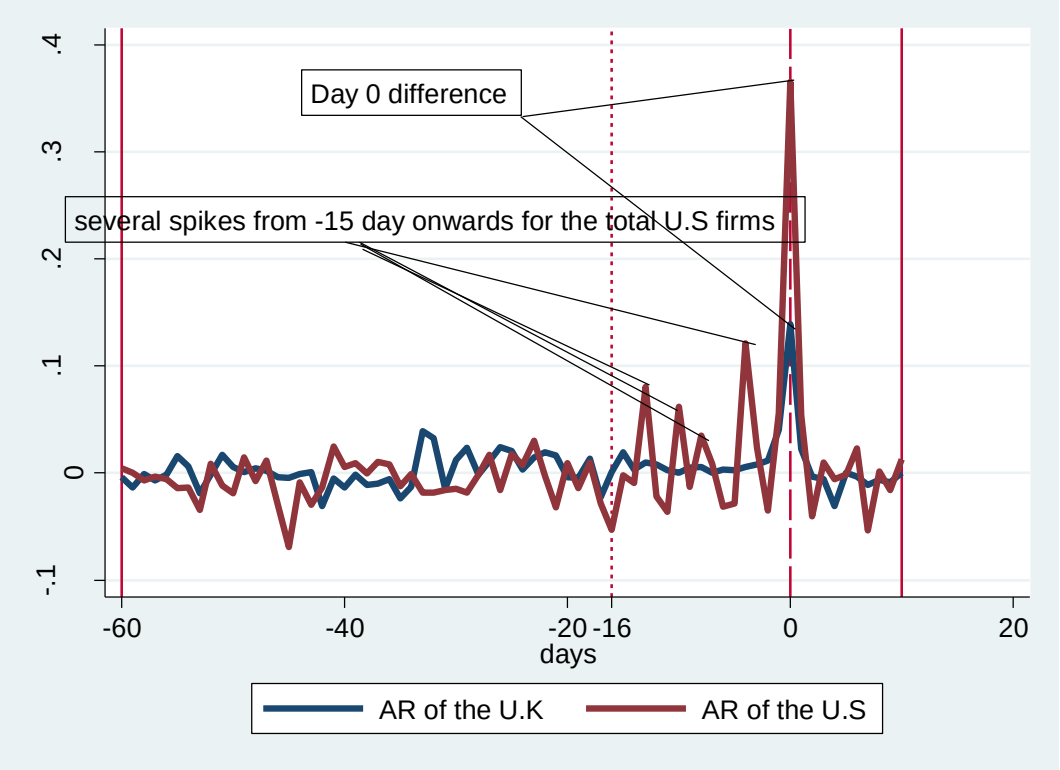


Figure 6.44: The AR of the U.K and U.S target firm 2009

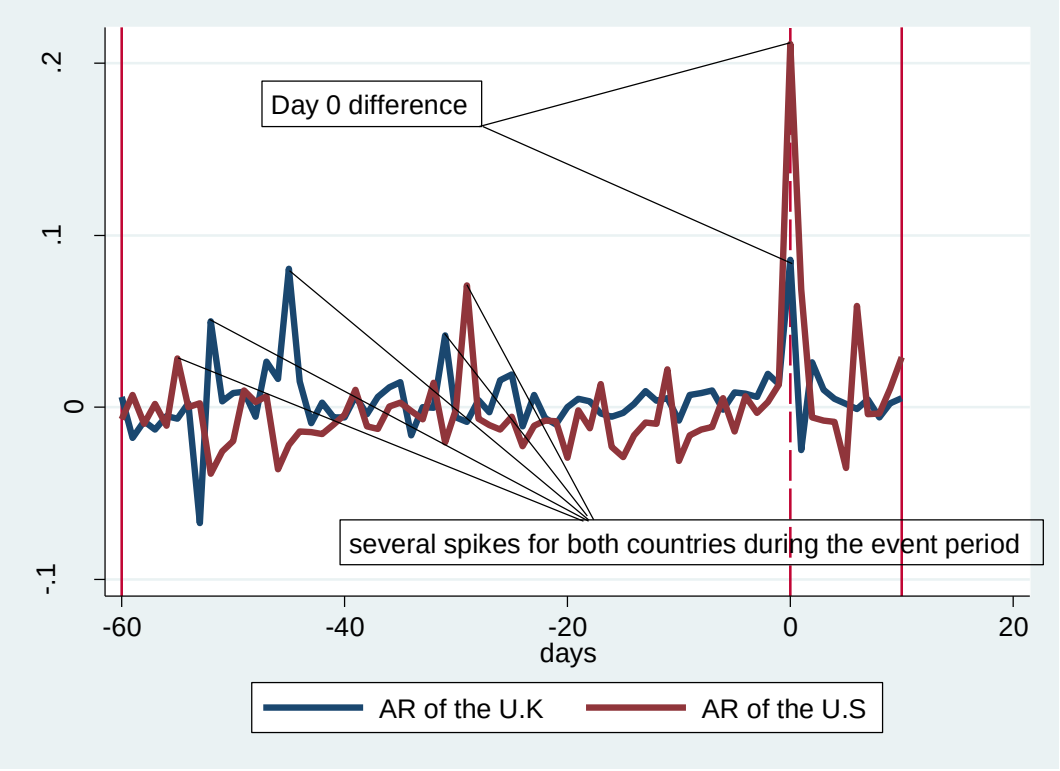
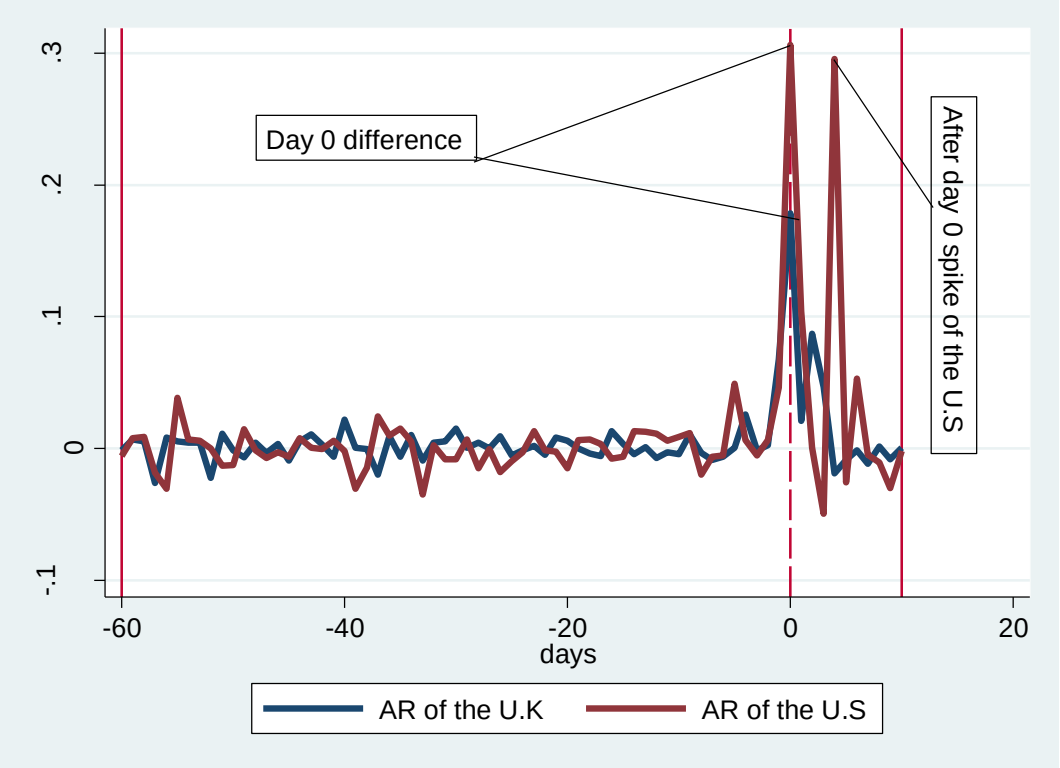


Figure 6.45: The AR of the U.K and U.S target firm 2010

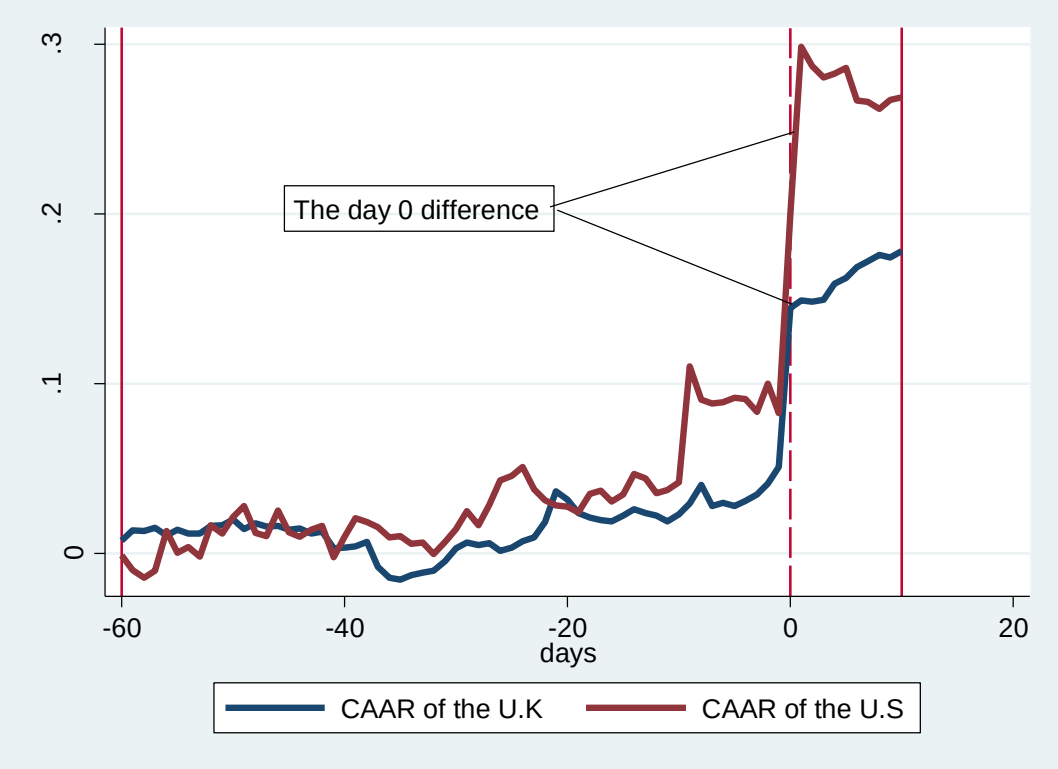


According to Figures 6.41 to 6.45, it is notable that the day 0 ARs of the U.S targets are much higher than those of the U.K targets in all five years which is suggestive that insider trading is more severe a problem in the U.K than in the U.S. Alternatively it may be that the merger terms are such that in the U.S the target firms receive a much greater boost than in the U.K. In 2006, the day 0 average abnormal return for U.S targets is more than 10% while that for the U.K targets is less than 10%. From 2007 onwards, the difference becomes much larger. In 2007, on day 0, the average abnormal return for U.K is 10% while that for the U.S is up to 30%. Besides, in 2008, the average abnormal return on day 0 for the U.K is 10% while that for the U.S is about 40%. In 2009 and 2010, the differences are both about 10%. Furthermore, it is obvious to see spikes during a 10-day period before the announcement day (from -10 day to 0 day) for the U.S targets. As a result, the conclusion made by Fidrmuc, Goergen and Renneboog (2005) that the observed abnormal returns in the U.K are larger than those in the U.S is supported by the data used in this thesis. In addition, the differences in news leakages are worth noting. As mentioned in Chapter 2 Section 2.3.2, the U.K Code requires much faster reporting of director's dealings. The directors must inform their company of the transaction as soon as possible and no

later than the fifth business day after a transaction for their own account or on behalf of their spouses and children (Hillier and Marshall, 2002). In the U.S., insiders only have to report their holdings within the first ten days of the month following the month of the trade (Persons, 1997). Evidences also support that for the U.S, relatively rarer news leakages were found in comparison with the U.K.

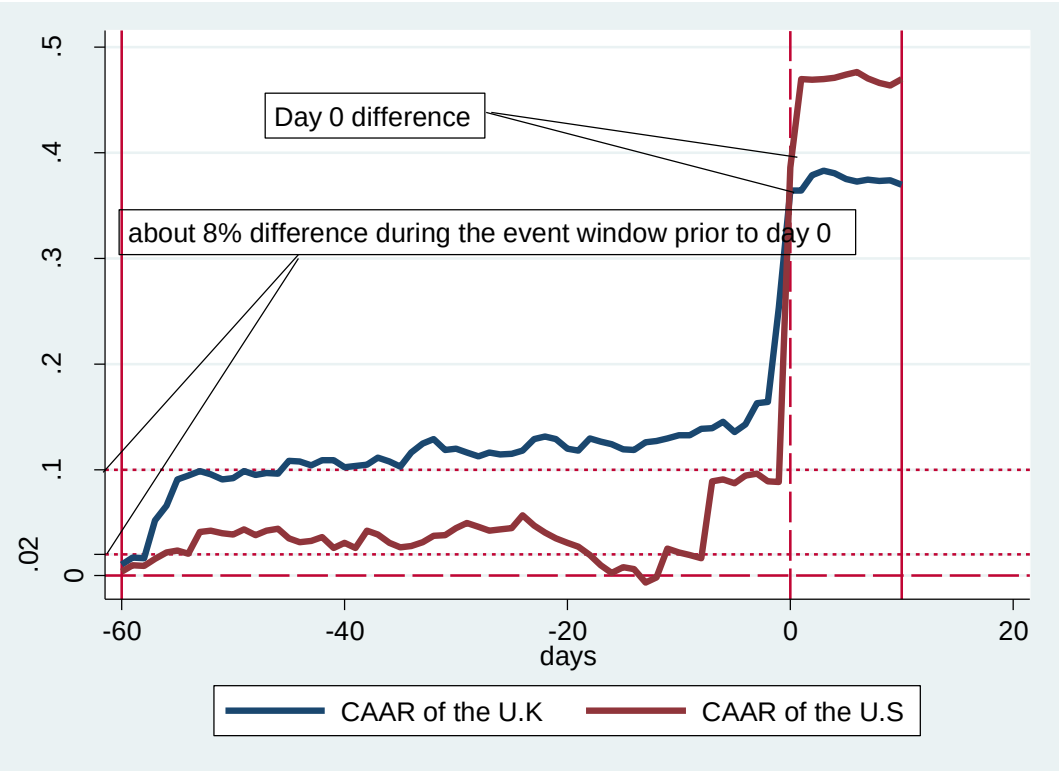
Figures 6.46-6.50 are the CAAR of the U.K and U.S target firms from 2006 to 2010.

Figure 6.46: The CAAR of the U.K and U.S target firms 2006



According to Figure 6.46, the buildup in the CAAR begins on day -38 for the U.K target firms relative to the date of announcement. From this day onwards, an increasing trend in the CAAR is observed, though with occasional dips. However, from day -5 onwards the buildup in CAAR is more perceptible as after this day the dips in the curve is less pronounced than that observed before day -5. For the U.S target firms, the increasing trend can be seen from the beginning of the event window. From day -60 to day -35, the trend is less obvious than it is after day -35. Moreover, all through the event window, the curve of the CAAR of the U.S is right above that of the U.K.

Figure 6.47: The CAAR of the U.K and U.S target firms 2007



According to Figure 6.41, the CAAR of the U.K increases on day -58 to 10% and then nothing before day -18. From day -18 onwards, an increasing trend in the CAAR of the U.K is observed. The buildup in the CAAR of the U.S begins on day -18 before which day, the CAAR is fluctuating about 0.

Figure 6.48: The CAAR of the U.K and U.S target firms 2008

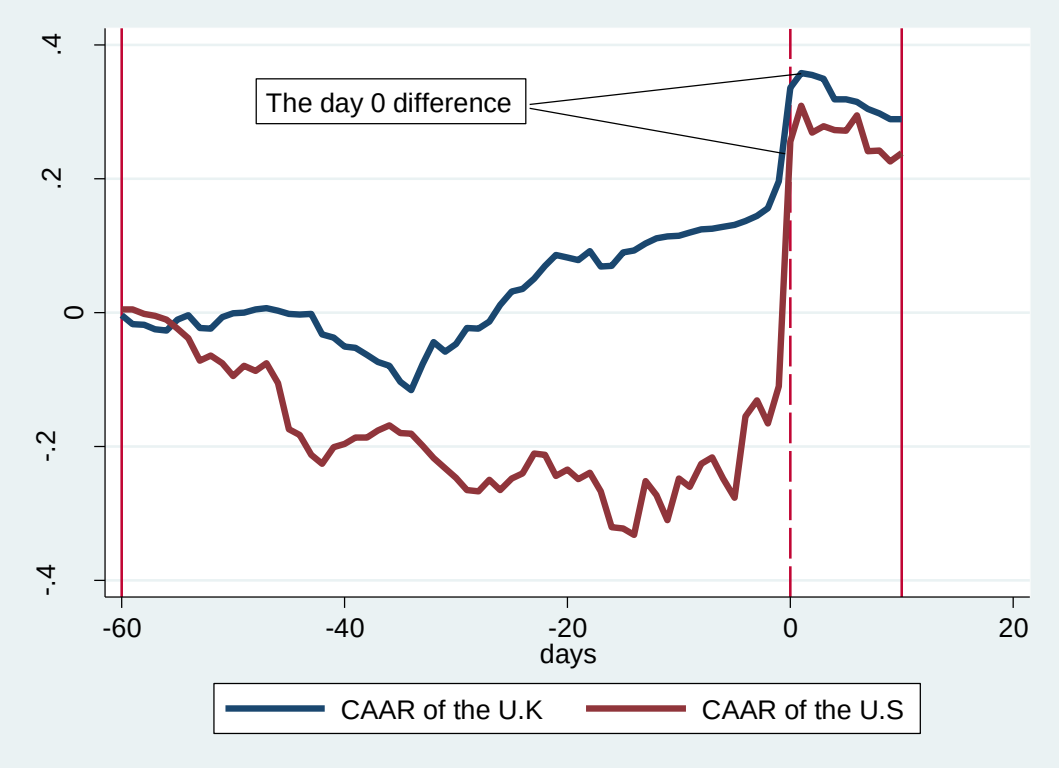
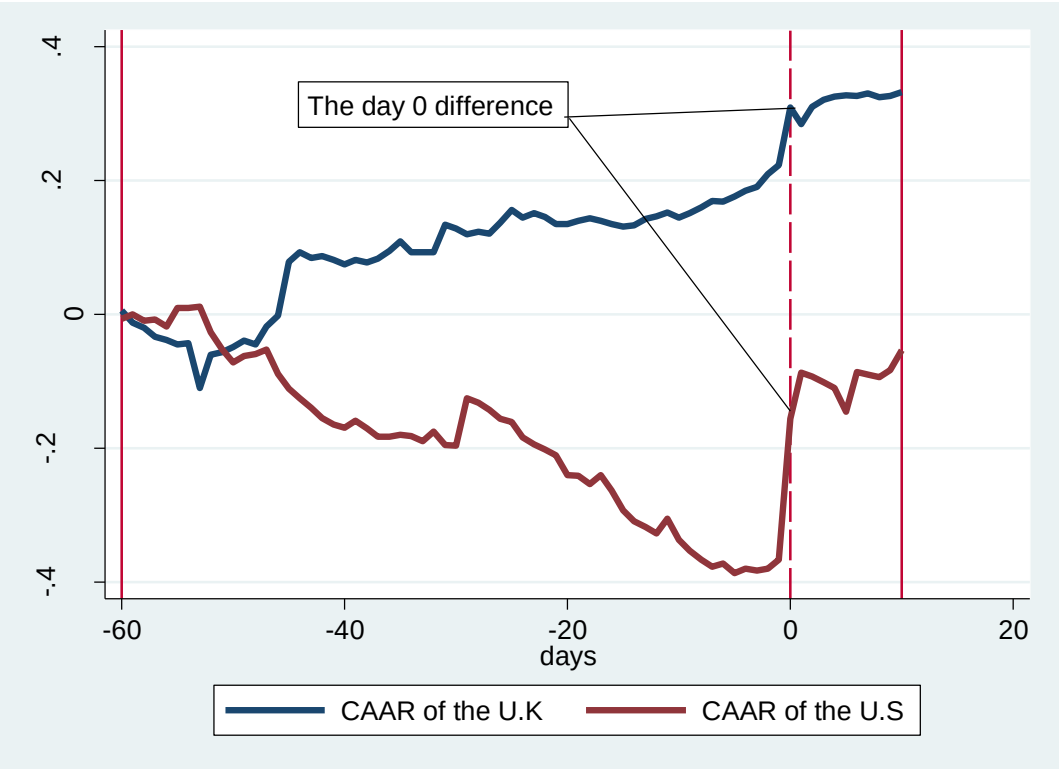


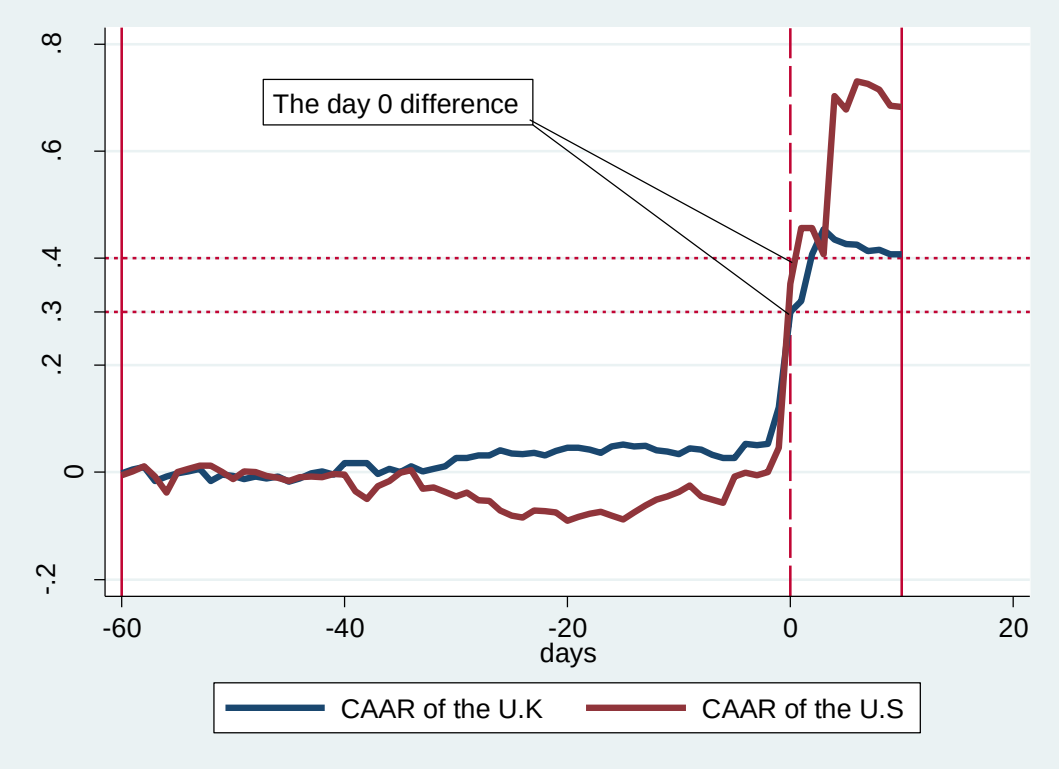
Figure 6.49: The CAAR of the U.K and U.S target firms 2009



According to Figure 6.48 and Figure 6.49, it is noticeable that in both 2008 and 2009, the CAARs of the U.S decrease sharply to about -40% and then starts to increase days

or weeks before merger announcement. However, for the U.K, in both years, the CAARs have an increasing trend and end up positive. The reason might be that the financial crisis happens in 2008 in the U.S and then spreads out to the Europe. When the stock market was in a down trend, barely any stocks can experience very high ARs and especially for U.S which has suffered the most severely, and therefore, a sharp dip in the CAAR is seen in Figure 6.49.

Figure 6.50: The CAAR of the U.K and U.S target firms 2010



In 2010, both the CAARs of the U.K and of the U.S remain stable about 0 before day -5. From day -5 onwards, an increasing trend of CAAR buildup can be observed for both curves.

Section 6.5 Conclusion

Similar to Chapter 5, this chapter also utilizes the four filters to detect the possible existence of insider trading prior to the merger announcement. The investigation is based on a database of U.S domestic takeovers whose announcement dates have been during 2006-2010. The methodology used is the same with that in Chapter 5. The AR

and CAAR have been calculated to examine the pattern of the stock prices. In a sample of 100 firms being investigated, 32 are considered to be absolute clean, 35 are suspected, 26 are ultra-suspected, 6 are ultra-ultra-suspected and 1 is considered obscure with lagged news. There is no obscure firm in the U.S. according to the analysis. In addition, when compared with the U.K, the U.S target firms have higher AR on day 0 for all five years, however, more absolute clean firms are found in the U.S than in the U.K. In the U.K, only 19.5% of the sample passed all four filters and are therefore considered as 'absolute clean' while in the U.S, 32% of the sample are considered as 'absolute clean.' The result of the Granger causality test shows that shows that 31% of the total U.S firms have evidence of Granger causality which is slightly higher than that of the U.K (27.6%) and the difference is supportive to Hillier and Marshall (2002) and Persons (1997) that the directors in the U.K are required to report more frequently to the regulatory authorities.

Appendix

In the appendix, firstly, the ARs and CAARs for both the targets and bidders in the U.S from 2006 to 2010 from the market-adjusted model and from the modified market model are presented. Secondly, the names, the announcement dates and the industries of both the targets and bidders in the U.S from 2006 to 2010 are presented. Thirdly, the names and the days on which the firms have abnormal returns in the U.S from 2006 to 2010 are shown in tables. Further, the results of the ADF test in the targets and bidders in the U.S from 2006 to 2010 are shown.

Table 6.8: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2006(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00166	0.004198	-0.00361	30%	-0.00166
-59	-0.01036	-0.0112	-0.01008	50%	-0.01202
-58	-0.00608	0.001089	-0.00848	25%	-0.01811
-57	0.003994	0.001621	0.004784	45%	-0.01411
-56	0.022095	0.010458	0.025974	60%	0.007982
-55	-0.01283	-0.00542	-0.0153	40%	-0.00485
-54	0.003207	-0.01035	0.007727	60%	-0.00164
-53	-0.00661	-0.00484	-0.0072	40%	-0.00825
-52	0.017072	-0.00072	0.023004	50%	0.008826
-51	-0.00583	-0.00988	-0.00447	35%	0.003
-50	0.009142	0.008209	0.009453	50%	0.012142
-49	0.005768	-0.00128	0.008116	45%	0.01791
-48	-0.01674	0.00839	-0.02511	20%	0.001173
-47	-0.00207	0.008096	-0.00546	40%	-0.00089
-46	0.013853	0.007648	0.015922	55%	0.012958
-45	-0.01357	-0.00626	-0.01601	40%	-0.00061
-44	-0.0033	-0.01177	-4.72E-04	30%	-0.00391
-43	0.003151	0.006236	0.002123	35%	-0.00076
-42	0.002636	-0.01282	0.007788	35%	0.001878
-41	-0.019	-0.00798	-0.02267	40%	-0.01712
-40	0.012781	9.76E-05	0.017008	40%	-0.00434
-39	0.010454	0.017021	0.008265	35%	0.006111
-38	-0.00319	0.002834	-0.0052	45%	0.002921
-37	-0.00471	0.006468	-0.00843	40%	-0.00178
-36	-0.00668	0.022955	-0.01656	35%	-0.00846
-35	8.74E-05	0.00612	-0.00192	45%	-0.00838

-34	-0.00409	-0.00607	-0.00343	45%	-0.01247
-33	0.001002	-0.00503	0.003012	40%	-0.01147
-32	-0.00685	-0.00294	-0.00816	35%	-0.01832
-31	0.006378	0.013359	0.004052	70%	-0.01194
-30	0.00707	0.006156	0.007375	50%	-0.00487
-29	0.009428	0.004614	0.011033	55%	0.004555
-28	-0.00965	-0.00092	-0.01257	40%	-0.0051
-27	0.011881	0.010319	0.012402	45%	0.006782
-26	0.014987	-0.00247	0.020808	50%	0.02177
-25	0.002867	0.009133	0.000779	55%	0.024637
-24	0.004935	-0.01905	0.012929	40%	0.029572
-23	-0.01425	-0.00292	-0.01803	25%	0.01532
-22	-0.00729	0.007744	-0.0123	55%	0.008029
-21	-0.00298	-0.01938	0.002482	25%	0.005047
-20	-0.00127	0.004045	-0.00304	35%	0.003778
-19	-0.00467	0.014896	-0.01119	30%	-0.00089
-18	0.010739	0.008064	0.011631	60%	0.009845
-17	0.002197	-0.00243	0.003741	45%	0.012042
-16	-0.00771	-0.0179	-0.00431	45%	0.004337
-15	0.003637	-0.00746	0.007337	65%	0.007974
-14	0.012034	0.007752	0.013462	60%	0.020008
-13	-0.00272	-0.00671	-0.00139	30%	0.017288
-12	-0.00972	0.002803	-0.01389	25%	0.00757
-11	0.000446	0.008239	-0.00215	30%	0.008016
-10	0.005264	0.000142	0.006971	75%	0.013279
-9	0.067055	0.002128	0.088698	50%	0.080335
-8	-0.02162	0.011271	-0.03259	50%	0.058713
-7	-0.00282	0.00493	-0.0054	55%	0.055892
-6	0.000555	-0.00051	0.000912	65%	0.056447
-5	0.003448	0.006759	0.002344	50%	0.059895
-4	-0.00127	-0.00247	-0.00087	40%	0.058624
-3	-0.00798	0.009283	-0.01373	45%	0.050646
-2	0.01545	-0.00511	0.022302	35%	0.066096
-1	-0.01762	0.009642	-0.0267	50%	0.04848
0	0.116522	0.020671	0.148473	75%	0.165003
1	0.098442	0.117641	0.092042	65%	0.263445
2	-0.01173	0.00046	-0.01579	50%	0.251719
3	-0.00602	-0.00066	-0.0078	35%	0.245704
4	0.001777	0.004419	0.000897	50%	0.247481
5	0.002711	-0.00512	0.00532	50%	0.250192
6	-0.01912	-0.00369	-0.02426	50%	0.231076
7	-0.00126	-0.00206	-0.00099	30%	0.229818
8	-0.00514	-0.00373	-0.00561	25%	0.224676
9	0.004135	-0.00013	0.005557	45%	0.228811
10	0.001067	0.009356	-0.0017	35%	0.229878
Average from day -60 to -6	0.001026	0.000922	0.001061	-	0.006803
Average from	0.00107	0.001027	0.001084	-	0.007751

day -60 to -5					
Average from day -60 to -1	0.000808	0.001147	0.000695	-	0.010965
Average from day -60 to +1	0.004249	0.003341	0.004552	-	0.017522
Average from day -60 to +10	0.003237	0.002901	0.00335	-	0.045433

Table 6.9: Daily average returns (AAR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2007(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.001544	0.004666	-0.00054	50%	0.001544
-59	0.006305	0.005039	0.007149	70%	0.007848
-58	-0.00263	-0.01069	0.002743	25%	0.005218
-57	0.004864	0.012865	-0.00047	60%	0.010082
-56	0.00498	0.004293	0.005438	55%	0.015062
-55	0.001329	0.001261	0.001374	50%	0.016391
-54	-0.00669	-0.01687	9.72E-05	35%	0.009699
-53	0.020006	0.036425	0.00906	65%	0.029706
-52	-0.00089	-0.00283	0.000399	45%	0.028813
-51	-0.00294	-0.01005	0.001795	35%	0.025871
-50	-0.002	-0.00645	0.000974	45%	0.023874
-49	0.005322	0.018556	-0.0035	40%	0.029196
-48	-0.00755	-0.00016	-0.01247	40%	0.02165
-47	0.00333	-0.0136	0.014619	50%	0.02498
-46	0.000358	0.002978	-0.00139	60%	0.025338
-45	-0.01055	-0.02407	-0.00154	35%	0.014785
-44	-0.00565	-0.018	0.002586	45%	0.009138
-43	0.000862	0.008588	-0.00429	40%	0.010001
-42	0.004087	-0.00076	0.007317	50%	0.014088
-41	-0.01248	-0.00847	-0.01515	50%	0.00161
-40	0.007235	0.018286	-0.00013	65%	0.008845
-39	-0.00659	-0.01298	-0.00232	25%	0.002258
-38	0.016865	0.012706	0.019638	65%	0.019123
-37	-0.00496	-0.0004	-0.00799	40%	0.014168
-36	-0.00713	0.011462	-0.01952	40%	0.007039
-35	-0.00636	-0.00373	-0.00811	55%	0.000683
-34	0.003188	-0.0006	0.005713	55%	0.00387
-33	0.002522	0.001561	0.003163	50%	0.006392

-32	0.00194	0.005921	-0.00071	60%	0.008332
-31	0.002881	-0.00536	0.008372	50%	0.011213
-30	0.005996	-0.00265	0.011761	60%	0.017208
-29	0.006098	0.006509	0.005824	55%	0.023306
-28	-0.00307	-0.01439	0.004474	50%	0.020233
-27	-0.00245	-0.00531	-0.00054	40%	0.017787
-26	-0.00215	-0.0077	0.001556	45%	0.015642
-25	0.003629	-0.01023	0.012871	55%	0.019271
-24	0.011942	0.016198	0.009104	60%	0.031213
-23	-0.01077	-0.0028	-0.01608	40%	0.020444
-22	-0.00407	-0.0136	0.002279	30%	0.016371
-21	-0.01078	-0.01263	-0.00955	35%	0.005591
-20	-0.00387	0.004012	-0.00912	25%	0.001724
-19	-0.00367	-0.00096	-0.00548	45%	-0.00195
-18	-0.00825	-0.01036	-0.00684	45%	-0.0102
-17	-0.00757	-0.01479	-0.00276	45%	-0.01777
-16	-0.0099	-0.02229	-0.00164	65%	-0.02767
-15	0.003893	0.020511	-0.00719	55%	-0.02377
-14	-0.00279	-0.01911	0.00809	45%	-0.02656
-13	-0.01707	-0.03183	-0.00723	20%	-0.04363
-12	0.007773	0.020204	-0.00051	60%	-0.03586
-11	0.024672	0.049996	0.00779	65%	-0.01119
-10	-0.00705	-0.02093	0.002209	55%	-0.01823
-9	-0.00268	0.004256	-0.00731	55%	-0.02092
-8	-0.00136	0.013975	-0.01158	45%	-0.02228
-7	0.070433	0.189846	-0.00918	40%	0.048155
-6	0.001792	-2.23E-03	0.004476	50%	0.049947
-5	-0.00592	-0.01589	0.000727	45%	0.044026
-4	0.002166	0.003981	0.000957	35%	0.046192
-3	0.001596	0.00936	-0.00358	45%	0.047788
-2	-0.00874	0.003091	-0.01662	20%	0.039052
-1	-0.00116	-0.00561	0.001806	50%	0.037893
0	0.299065	0.055354	0.461539	80%	0.336958
1	0.081967	0.056235	0.099122	60%	0.418925
2	-0.00167	-0.00314	-0.0007	65%	0.41725
3	0.001255	0.006119	-0.00199	30%	0.418505
4	0.000153	0.000895	-0.00034	50%	0.418657
5	0.001613	0.010278	-0.00416	40%	0.42027
6	0.003859	0.001822	0.005217	45%	0.424129
7	-0.01024	-0.02052	-0.00338	30%	0.41389
8	-0.00367	-0.00838	-0.00053	40%	0.410225
9	-0.0036	-0.01126	0.001505	35%	0.406624
10	0.005463	0.011483	0.00145	45%	0.412087
Average from day -60 to -6	0.000908	0.002605	-0.00022	-	0.007885
Average from day -60 to -5	0.000786	0.002275	-0.00021	-	0.00853

Average from day -60 to -1	0.000631	0.002304	-0.00048	-	0.010811
Average from day -60 to +1	0.006756	0.004029	0.008576	-	0.022653
Average from day -60 to +10	0.005804	0.003339	0.007447	-	0.072481

Table 6.10: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2008(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.005979	0.017217	-0.01088	65%	0.005979
-59	0.002565	-0.00773	0.018001	35%	0.008544
-58	-0.01092	-0.00555	-0.01898	45%	-0.00238
-57	0.001246	-0.00349	8.35E-03	50%	-0.00113
-56	-0.00649	-0.00862	-0.00329	40%	-0.00762
-55	-0.00946	-0.00998	-0.00869	30%	-0.01708
-54	-0.00796	0.022055	-0.05299	35%	-0.02504
-53	-0.03399	-0.03489	-0.03263	40%	-0.05902
-52	0.007387	-0.01718	0.044236	55%	-0.05164
-51	-0.01342	-0.01545	-0.01038	50%	-0.06506
-50	-0.01243	-0.0244	0.005516	40%	-0.07749
-49	0.014303	0.031615	-0.01166	45%	-0.06319
-48	-0.0105	-0.04459	0.040621	50%	-0.07369
-47	0.012405	0.044702	-0.03604	70%	-0.06129
-46	-0.03275	-0.01884	-0.05361	25%	-0.09404
-45	-0.06718	-0.03095	-0.12152	40%	-0.16122
-44	-0.00293	-0.01519	0.015452	50%	-0.16415
-43	-0.03452	-0.04191	-0.02343	25%	-0.19867
-42	-0.01013	-0.01821	0.00199	45%	-0.2088
-41	0.019927	0.012961	0.030375	30%	-0.18887
-40	0.002927	-0.00626	0.016714	50%	-0.18594
-39	0.008843	0.024372	-0.01445	45%	-0.1771
-38	0.010622	0.008911	0.013188	60%	-0.16648
-37	0.015416	0.008151	0.026313	50%	-0.15106
-36	-0.00041	-0.0169	0.024308	60%	-0.15148
-35	-0.00832	-0.0131	-0.00114	50%	-0.15979
-34	0.015529	0.019511	0.009556	60%	-0.14426
-33	-0.01811	-0.03547	0.007947	40%	-0.16237
-32	-0.01918	-0.02893	-0.00455	60%	-0.18155

-31	-0.01718	-0.02822	-0.00061	45%	-0.19873
-30	-0.01722	-0.01337	-0.02299	40%	-0.21594
-29	-0.01602	-0.03161	0.007356	55%	-0.23197
-28	0.004631	0.021983	-0.0214	45%	-0.22734
-27	0.02421	0.036605	0.005616	50%	-0.20313
-26	-0.00911	-0.01745	0.003396	50%	-0.21224
-25	0.012848	-0.01322	0.051951	35%	-0.19939
-24	0.005385	0.019598	-0.01593	65%	-0.194
-23	0.035979	0.016727	0.064857	55%	-0.15803
-22	0.003367	0.061284	-0.08351	45%	-0.15466
-21	-0.04244	-0.08564	0.022361	50%	-0.1971
-20	0.007266	0.019367	-0.01089	55%	-0.18983
-19	-0.02094	-0.03905	0.006227	50%	-0.21077
-18	0.011295	0.016996	0.002743	65%	-0.19948
-17	-0.03002	-0.06081	0.016169	45%	-0.2295
-16	-0.05531	-0.0281	-0.09612	30%	-0.28481
-15	0.005161	-0.00522	0.020733	45%	-0.27964
-14	-0.01066	0.016971	-0.0521	40%	-0.2903
-13	0.074234	0.043499	0.120337	50%	-0.21607
-12	-0.01932	-0.03456	0.00353	50%	-0.23539
-11	-0.04304	-0.02669	-0.06757	55%	-0.27843
-10	0.059445	-0.00473	0.155713	60%	-0.21899
-9	-0.00827	-0.01271	-0.0016	60%	-0.22726
-8	0.046312	0.085288	-0.01215	45%	-0.18094
-7	0.008901	0.023363	-0.01279	50%	-0.17204
-6	-0.02549	-0.04881	0.009493	45%	-0.19753
-5	-0.02819	0.016575	-0.09534	40%	-0.22572
-4	0.121128	0.118746	0.124702	50%	-0.10459
-3	0.022133	0.013878	0.034516	55%	-0.08246
-2	-0.02444	-0.01798	-0.03413	55%	-0.1069
-1	0.051459	0.096066	-0.01545	60%	-0.05544
0	0.363359	0.124357	0.721862	90%	0.307917
1	0.056962	0.07588	0.028584	55%	0.364878
2	-0.04011	-0.00396	-0.09435	45%	0.324766
3	0.015565	0.003176	0.034149	45%	0.340331
4	-0.0023	0.01342	-0.02587	30%	0.338033
5	-0.0059	-0.01125	0.002124	45%	0.332135
6	0.016681	0.017527	0.015412	50%	0.348816
7	-0.05373	-0.04586	-0.06554	30%	0.295084
8	0.00219	-0.00646	0.01516	45%	0.297274
9	-0.01958	-0.01761	-0.02253	35%	0.277694
10	0.00886	0.014431	0.000505	35%	0.286554
Average from day -60 to -6	-0.00359	-0.00539	-0.00089	-	-0.15617
Average from day -60 to -5	-0.00403	-0.005	-0.00257	-	-0.15741
Average	-0.00092	-0.00116	-0.00058	-	-0.15274

from day -60 to -1					
Average from day -60 to +1	0.005885	0.002111	0.011547	-	-0.13696
Average from day -60 to +10	0.004036	0.001328	0.008098	-	-0.07959

Table 6.11: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2009(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.003613	0.010996	0.001768	60%	0.003613
-59	0.014915	0.023176	0.01285	60%	0.018529
-58	-0.00366	-0.03559	0.004324	40%	0.014869
-57	0.006606	-0.02284	0.013968	60%	0.021475
-56	-0.00449	-0.00365	-0.0047	35%	0.016982
-55	0.03275	0.169253	-0.00138	40%	0.049731
-54	0.005952	-0.00274	0.008125	55%	0.055683
-53	0.006399	-0.00519	0.009297	45%	0.062082
-52	-0.03146	-0.20952	0.013051	45%	0.030619
-51	-0.01944	-0.01865	-0.01963	20%	0.011183
-50	-0.01368	-0.05559	-0.0032	50%	-0.0025
-49	0.01535	0.057405	0.004837	60%	0.012855
-48	0.012013	0.00462	0.013861	55%	0.024868
-47	0.013574	0.015732	0.013035	60%	0.038442
-46	-0.02821	-0.11173	-0.00733	30%	0.010231
-45	-0.0157	-0.07527	-0.00081	45%	-0.00547
-44	-0.00464	0.014683	-0.00947	50%	-0.01011
-43	-0.00505	-0.01571	-0.00239	40%	-0.01516
-42	-0.00793	-0.02316	-0.00412	50%	-0.02309
-41	-0.00363	-0.00703	-0.00278	35%	-0.02672
-40	0.00281	0.011422	0.000657	65%	-0.02391
-39	0.015636	0.024097	0.01352	60%	-0.00827
-38	0.000268	-0.03587	0.009302	60%	-0.008
-37	-0.00457	-0.00103	-0.00546	50%	-0.01258
-36	0.006037	0.027678	0.000627	45%	-0.00654
-35	0.006066	-0.04139	0.017931	55%	-0.00047
-34	0.003006	0.002782	0.003062	40%	0.002533
-33	-0.00335	0.003579	-0.00508	40%	-0.00082
-32	0.02076	0.063405	0.010098	50%	0.019943

-31	-0.01324	-0.06104	-0.00129	30%	0.006702
-30	0.006522	-0.0136	0.011552	65%	0.013223
-29	0.076788	0.410219	-0.00657	40%	0.090012
-28	-0.00209	-0.01881	0.002093	30%	0.087924
-27	-0.00045	-0.01103	0.002191	50%	0.087472
-26	-0.00607	-0.01287	-0.00436	25%	0.081406
-25	0.000784	-0.03208	0.008999	55%	0.08219
-24	-0.01166	-0.0783	0.004998	40%	0.070529
-23	-0.00731	0.004468	-0.01025	35%	0.063222
-22	4.17E-05	0.001447	-0.00031	35%	0.063264
-21	0.001687	0.001317	0.001779	55%	0.064951
-20	-0.02129	-0.08268	-0.00595	55%	0.043658
-19	0.007712	-0.00016	0.009679	50%	0.05137
-18	-0.00658	-0.0092	-0.00592	45%	0.044794
-17	0.02385	0.093989	0.006315	80%	0.068644
-16	-0.01688	-0.02159	-0.0157	20%	0.051764
-15	-0.02251	-0.05248	-0.01502	30%	0.029253
-14	-0.01035	-0.11953	0.016942	45%	0.018901
-13	-0.00247	-0.01023	-0.00053	30%	0.016434
-12	-0.00619	-0.00698	-0.00599	30%	0.010243
-11	0.025293	0.123238	0.000806	45%	0.035536
-10	-0.02588	-0.09268	-0.00918	40%	0.00966
-9	-0.01035	-0.04232	-0.00236	45%	-0.00069
-8	-0.00421	-0.06102	0.009991	65%	-0.0049
-7	-0.00222	0.003064	-0.00354	40%	-0.00712
-6	0.010757	0.033686	0.005025	50%	0.003632
-5	-0.00885	-0.04231	-0.00049	55%	-0.00522
-4	0.014659	0.029041	0.011063	45%	0.009442
-3	0.004536	0.009445	0.003309	45%	0.013978
-2	0.011793	0.014639	0.011082	60%	0.025771
-1	0.020098	0.074366	0.006531	50%	0.045869
0	0.217753	0.23559	0.213294	90%	0.263622
1	0.074274	-0.00541	0.094194	60%	0.337896
2	-0.00016	0.010101	-0.00273	45%	0.337733
3	0.002589	0.010308	0.000659	50%	0.340322
4	-0.00071	0.000618	-0.00104	30%	0.339615
5	-0.03071	-0.13697	-0.00414	35%	0.308908
6	0.065694	0.252071	0.019099	55%	0.374601
7	0.005475	0.004082	0.005823	60%	0.380076
8	0.002312	0.00186	0.002425	50%	0.382388
9	0.017498	0.107913	-0.00511	25%	0.399886
10	0.03798	0.186125	0.000944	65%	0.437866
Average from day -60 to -6	6.59945E-05	-0.0053	0.001407	-	0.024219
Average from day -60 to -5	-9.32196E-05	-0.00596	0.001373	-	0.023694
Average	0.000764428	-0.00344	0.001814	-	0.023699

from day -60 to -1					
Average from day -60 to +1	0.005449882	0.000388	0.006715	-	0.032636
Average from day -60 to +10	0.006167052	0.006481	0.006088	-	0.074998

Table 6.12: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00653	-0.0294	0.003273	35%	-0.00653
-59	0.008422	0.025617	0.001053	60%	0.001892
-58	0.006044	-0.00381	0.010267	35%	0.007935
-57	-0.01825	0.001699	-0.02679	50%	-0.01031
-56	-0.02984	0.000111	-0.04267	50%	-0.04015
-55	0.041667	-0.00554	0.0619	35%	0.00152
-54	0.006005	-0.0191	0.016765	45%	0.007525
-53	0.007378	-0.0017	0.011271	65%	0.014903
-52	0.000524	-0.00876	0.004504	50%	0.015427
-51	-0.00682	-0.01883	-0.00167	35%	0.008611
-50	-0.01276	0.000379	-0.01839	20%	-0.00415
-49	0.013686	0.002213	0.018604	60%	0.009537
-48	0.000554	-0.02103	0.009806	40%	0.010091
-47	-0.00814	-0.00406	-0.00989	35%	0.001948
-46	-0.00045	-0.01462	0.00562	50%	0.001495
-45	-0.00529	-0.01155	-0.0026	40%	-0.00379
-44	0.007672	0.010504	0.006458	50%	0.003879
-43	0.002492	3.55E-03	0.002036	60%	0.006371
-42	-1E-04	0.009618	-0.00426	40%	0.006271
-41	0.005528	0.015822	0.001116	55%	0.011799
-40	-0.00315	-0.00682	-0.00158	55%	0.008648
-39	-0.02994	-0.02341	-0.03274	30%	-0.02129
-38	-0.0142	0.004676	-0.02229	50%	-0.03549
-37	0.026589	0.032708	0.023967	60%	-0.00891
-36	0.011072	0.019585	0.007424	75%	0.002166
-35	0.01483	0.038179	0.004823	50%	0.016996
-34	0.007868	0.011051	0.006503	50%	0.024863
-33	-0.0306	-0.07708	-0.01068	40%	-0.00574
-32	0.003641	-0.00595	0.007752	50%	-0.0021
-31	-0.00542	-0.00709	-0.0047	35%	-0.00752
-30	-0.00684	-0.01327	-0.00409	35%	-0.01436

-29	0.007523	0.025743	-0.00029	55%	-0.00683
-28	-0.01317	-0.01634	-0.01182	50%	-0.02001
-27	0.003224	-0.01029	0.009015	60%	-0.01678
-26	-0.01449	0.031156	-0.03406	60%	-0.03128
-25	-0.00894	-0.02196	-0.00336	45%	-0.04022
-24	0.001198	0.004882	-0.00038	65%	-0.03902
-23	0.012438	0.030636	0.004638	50%	-0.02658
-22	0.000726	-0.01663	0.008163	55%	-0.02585
-21	-0.00394	0.020315	-0.01434	30%	-0.0298
-20	-0.01219	-0.01286	-0.0119	45%	-0.04198
-19	0.007883	0.054543	-0.01211	70%	-0.0341
-18	0.005934	0.01807	0.000733	55%	-0.02816
-17	0.002924	-0.0099	0.00842	55%	-0.02524
-16	-0.00834	-0.02604	-0.00076	45%	-0.03358
-15	-0.00409	-0.02527	0.00498	40%	-0.03768
-14	0.015445	0.008935	0.018235	70%	-0.02223
-13	0.011892	0.007982	0.013568	60%	-0.01034
-12	0.011773	0.051122	-0.00509	30%	0.001435
-11	0.006172	0.023827	-0.0014	50%	0.007606
-10	0.009687	-0.00187	0.014639	45%	0.017294
-9	0.012777	0.046282	-0.00158	55%	0.03007
-8	-0.01797	-0.03755	-0.00958	20%	0.012102
-7	-0.00436	0.003437	-0.0077	45%	0.007745
-6	-0.00372	-0.02454	0.0052	40%	0.004022
-5	0.046005	0.002235	0.064764	45%	0.050027
-4	0.007075	0.012164	0.004894	60%	0.057102
-3	-0.00386	-0.00172	-0.00478	45%	0.053243
-2	0.008241	0.026304	0.0005	55%	0.061484
-1	0.045386	0.121998	0.012552	70%	0.10687
0	0.307757	0.181303	0.361952	95%	0.414627
1	0.103866	0.030593	0.135269	55%	0.518493
2	0.001963	0.00699	-0.00019	55%	0.520456
3	-0.04626	-0.00654	-0.06328	35%	0.474197
4	0.296463	-0.00694	0.426492	45%	0.77066
5	-0.02255	0.005663	-0.03465	60%	0.748105
6	0.051295	0.001618	0.072585	45%	0.7994
7	-0.00303	-0.0027	-0.00318	30%	0.796367
8	-0.00955	-0.00167	-0.01292	30%	0.786819
9	-0.0298	-0.00669	-0.0397	60%	0.757021
10	0.000807	0.003464	-0.00033	45%	0.757828
Average from day -60 to -6	7.32364E-05	0.000497673	-0.00011	-	-0.00705
Average from day -60 to -5	0.000893446	0.000528696	0.00105	-	-0.00603
Average from day -60 to -1	0.00178125	0.003139217	0.001199	-	-0.00099

Average from day -60 to +1	0.008362871	0.006455629	0.00918	-	0.014096
Average from day -60 to +10	0.010673746	0.005541465	0.012873	-	0.102603

Table 6.14: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2006(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00214	0.011314	-0.00451	40%	-0.00214
-59	-0.00795	-0.01189	-0.00726	30%	-0.01009
-58	-0.01425	0.004179	-0.01751	35%	-0.02435
-57	-0.00589	-0.00678	-0.00574	30%	-0.03024
-56	-0.00217	0.008571	-0.00407	45%	-0.03241
-55	-0.00356	-0.00408	-0.00347	40%	-0.03597
-54	-0.02013	0.002675	-0.02415	40%	-0.0561
-53	-0.01226	0.001164	-0.01463	50%	-0.06836
-52	-0.00682	-0.00022	-0.00799	45%	-0.07518
-51	-0.03217	0.005181	-0.03876	45%	-0.10735
-50	-0.00734	-0.00208	-0.00827	40%	-0.11469
-49	-0.00656	-0.00589	-0.00668	40%	-0.12125
-48	-0.0034	0.000874	-0.00415	55%	-0.12465
-47	-0.00636	-0.00311	-0.00694	35%	-0.13101
-46	0.024808	-0.00661	0.030351	55%	-0.1062
-45	-0.02988	0.004263	-0.0359	50%	-0.13608
-44	0.01436	-0.00073	0.017024	60%	-0.12172
-43	-0.00622	-0.0211	-0.0036	35%	-0.12794
-42	-0.00552	-0.00429	-0.00574	35%	-0.13346
-41	-0.00428	0.004392	-0.00581	30%	-0.13774
-40	-0.00433	0.012789	-0.00735	60%	-0.14207
-39	0.004057	-0.00024	0.004815	50%	-0.13801
-38	0.001414	0.001702	0.001363	50%	-0.1366
-37	-0.01106	0.002241	-0.0134	55%	-0.14765
-36	-0.00318	-0.00612	-0.00266	60%	-0.15083
-35	-0.00374	0.002149	-0.00479	45%	-0.15457
-34	-0.00581	0.00518	-0.00775	50%	-0.16039
-33	-0.01068	6.97E-05	-0.01257	35%	-0.17107
-32	-0.00875	0.002629	-0.01076	40%	-0.17982
-31	0.001859	0.016987	-0.00081	60%	-0.17796
-30	-0.00126	-0.00585	-0.00045	60%	-0.17921
-29	-0.00061	-1.41E-03	-0.00047	50%	-0.17982
-28	-0.00249	0.001592	-0.00321	50%	-0.18231

-27	-0.00654	-0.00655	-0.00653	40%	-0.18885
-26	-0.00926	-0.01145	-0.00887	50%	-0.1981
-25	0.001526	0.001156	0.001592	60%	-0.19658
-24	-0.00448	-0.00169	-0.00497	40%	-0.20105
-23	-0.00131	0.010478	-0.00339	45%	-0.20236
-22	-0.00149	0.008589	-0.00327	50%	-0.20385
-21	-0.00028	0.006973	-0.00157	45%	-0.20414
-20	-0.0077	-0.01136	-0.00706	25%	-0.21184
-19	0.001272	-0.00129	0.001723	40%	-0.21057
-18	-0.00278	0.002998	-0.0038	35%	-0.21335
-17	-0.00589	0.004931	-0.0078	35%	-0.21924
-16	-0.00713	-0.00601	-0.00732	35%	-0.22637
-15	-0.02552	-0.00548	-0.02905	35%	-0.25189
-14	0.004382	-0.00984	0.006891	50%	-0.24751
-13	0.023671	-7.26E-04	0.027976	50%	-0.22383
-12	-0.01973	-0.00293	-0.02269	50%	-0.24356
-11	0.01916	0.000847	0.022392	60%	-0.2244
-10	0.004304	0.001877	0.004732	65%	-0.2201
-9	-0.0102	0.004447	-0.01279	50%	-0.2303
-8	-0.02348	-0.02426	-0.02334	25%	-0.25378
-7	-0.00492	-0.00686	-0.00457	40%	-0.2587
-6	-0.01797	-0.0085	-0.01964	40%	-0.27667
-5	-0.00767	-0.01543	-0.0063	30%	-0.28434
-4	-0.00621	-0.00105	-0.00713	35%	-0.29055
-3	0.05628	-0.00115	0.066416	75%	-0.23427
-2	-0.0004	0.010281	-2.28E-03	55%	-0.23467
-1	-0.00107	0.000656	-0.00137	45%	-0.23574
0	0.002881	-0.00872	0.004929	45%	-0.23286
1	0.008184	-0.00083	0.009776	50%	-0.22468
2	-0.00862	-0.01343	-0.00778	25%	-0.2333
3	-0.02355	-0.00152	-0.02744	45%	-0.25685
4	-0.00052	-0.00521	0.000311	50%	-0.25737
5	0.003876	0.002667	0.004089	70%	-0.25349
6	0.00112	-0.00408	0.002037	35%	-0.25237
7	0.010497	-0.00554	0.013327	40%	-0.24188
8	-0.00324	-0.00157	-0.00353	35%	-0.24512
9	-0.0039	-0.00143	-0.00486	50%	-0.24902
10	-0.00622	0.002252	-0.00966	50%	-0.25524
Average from day -60 to -6	-0.00503	-0.000856333	-0.00577	-	-0.15826
Average from day -60 to -5	-0.00508	-0.001116577	-0.00578	-	-0.16051
Average from day -60 to -1	-0.00393	-0.000896522	-0.00446	-	-0.1664
Average from	-0.00362	-0.001021634	-0.00408	-	-0.16841

day -60 to +1					
Average from day -60 to +10	-0.00359	-0.001284539	-0.00404	-	-0.17868

Table 6.15: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2007(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.002047	0.000609	0.003006	40%	0.002047
-59	-0.0014	-0.00402	0.000342	45%	0.000646
-58	0.004918	-0.00051	0.008535	50%	0.005564
-57	0.002172	-0.00075	0.004123	35%	0.007736
-56	-0.00666	0.002562	-0.0128	45%	0.00108
-55	-0.00235	-0.00119	-0.00311	40%	-0.00127
-54	0.002581	-0.00161	0.005376	45%	0.001315
-53	-0.00348	-0.00854	-0.00011	30%	-0.00217
-52	-0.00214	-0.00104	-0.00288	35%	-0.00431
-51	0.00085	-0.00422	0.00423	60%	-0.00346
-50	-0.00423	-0.00384	-0.00448	40%	-0.00769
-49	-0.00201	-0.00348	-0.00104	45%	-0.0097
-48	0.004825	-0.00145	0.009007	55%	-0.00487
-47	-0.00525	-0.00147	-0.00778	35%	-0.01013
-46	0.006127	0.012484	0.001888	50%	-0.004
-45	-0.00649	-0.00993	-0.00419	45%	-0.01049
-44	0.001621	0.000332	0.002481	60%	-0.00887
-43	-0.00746	-0.00264	-0.01066	25%	-0.01632
-42	-0.0033	0.000592	-0.0059	50%	-0.01963
-41	-0.00744	-0.00011	-0.01232	25%	-0.02706
-40	0.007416	0.011094	0.004964	55%	-0.01965
-39	-0.00119	-0.01363	0.007106	40%	-0.02084
-38	-0.00319	-0.00517	-0.00187	30%	-0.02402
-37	0.005477	0.005073	0.005746	50%	-0.01855
-36	-0.00559	0.000849	-0.00989	45%	-0.02414
-35	0.006221	0.002942	0.008407	70%	-0.01792
-34	-0.00336	0.003962	-0.00825	35%	-0.02128
-33	6.07E-06	-0.00292	0.001958	50%	-0.02127
-32	-0.0078	-0.02463	0.003414	40%	-0.02908
-31	0.005929	0.002254	0.008379	50%	-0.02315
-30	0.000832	-0.00279	0.003244	35%	-0.02231
-29	0.003468	-0.00681	0.010318	60%	-0.01885
-28	-0.00055	-0.0047	0.002217	35%	-0.0194
-27	-0.0024	-0.0018	-0.00279	40%	-0.02179
-26	0.003955	-0.00236	0.008169	45%	-0.01784

-25	-0.0118	-0.00291	-0.01772	35%	-0.02963
-24	-0.00029	0.008674	-0.00626	45%	-0.02992
-23	0.01253	0.01955	0.007851	60%	-0.01739
-22	-0.00305	-0.00172	-0.00393	35%	-0.02044
-21	0.006344	0.005712	0.006766	55%	-0.0141
-20	0.002357	-0.00568	0.007715	45%	-0.01174
-19	0.000438	0.0021	-0.00067	55%	-0.0113
-18	-0.00518	-0.00776	-0.00346	25%	-0.01648
-17	-0.00638	-0.00952	-0.00429	25%	-0.02286
-16	0.001902	-0.00939	0.009428	50%	-0.02096
-15	-0.00633	-0.01211	-0.00248	35%	-0.02729
-14	-0.00262	-0.00897	0.001617	40%	-0.02991
-13	-0.01397	-0.0189	-0.01068	35%	-0.04388
-12	-0.00431	-0.00575	-0.00335	40%	-0.04819
-11	-0.0041	-0.0034	-0.00457	40%	-0.05229
-10	-0.00087	0.000674	-0.0019	45%	-0.05316
-9	-0.00287	-0.00816	0.000655	40%	-0.05603
-8	-0.00312	-0.00676	-0.00069	45%	-0.05914
-7	-0.00152	0.0055	-0.0062	40%	-0.06066
-6	0.001352	-0.00495	0.005555	65%	-0.05931
-5	-0.00327	-0.0049	-0.00217	45%	-0.06258
-4	0.000474	-0.01196	0.008763	40%	-0.0621
-3	0.000733	-0.00698	0.005876	40%	-0.06137
-2	-0.00493	0.000354	-0.00845	55%	-0.0663
-1	0.001419	-0.01112	0.009782	50%	-0.06488
0	-0.00564	0.000153	-0.00951	50%	-0.07052
1	0.012219	0.008658	0.014592	55%	-0.05831
2	0.00507	0.001202	0.007648	65%	-0.05324
3	-0.00141	-0.00174	-0.00119	45%	-0.05465
4	0.001327	0.003621	-0.0002	65%	-0.05332
5	0.00469	0.001091	0.007089	70%	-0.04863
6	0.01061	0.012092	0.009622	60%	-0.03802
7	0.000384	-0.00123	0.001458	55%	-0.03764
8	-0.01064	-0.0217	-0.00327	35%	-0.04828
9	-0.00537	0.000389	-0.00921	50%	-0.05365
10	0.000444	0.003947	-0.00189	50%	-0.0532
Average from day -60 to -6	-0.00107876	-0.002375036	-0.00021	-	-0.0203
Average from day -60 to -5	-0.00111789	-0.002420125	-0.00025	-	-0.02105
Average from day -60 to -1	-0.00108177	-0.002753883	3.38E-05	-	-0.02389
Average from day -60 to +1	-0.00094076	-0.002522935	0.000115	-	-0.0252

Average from day -60 to +10	-0.0007496	-0.002235915	0.000242	-	-0.02821

Table 6.16: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2008(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.01789	-0.01295	-0.02392	30%	-0.01789
-59	0.003897	0.015179	-0.00989	50%	-0.01399
-58	0.004618	0.001873	0.007973	40%	-0.00937
-57	-0.01007	-0.01397	-0.0053	35%	-0.01944
-56	-0.00091	-0.00044	-0.00148	50%	-0.02035
-55	0.008504	0.010103	0.00655	65%	-0.01185
-54	-0.00272	0.005042	-0.01221	20%	-0.01457
-53	-0.00405	-0.0091	0.002119	55%	-0.01862
-52	0.008975	0.013413	0.003551	70%	-0.00964
-51	-0.00589	-0.01839	0.009399	35%	-0.01553
-50	-0.01656	-0.01914	-0.01342	55%	-0.03209
-49	-0.00506	-0.00652	-0.00327	50%	-0.03715
-48	0.005009	0.010653	-0.00189	55%	-0.03214
-47	0.009268	0.016649	0.000248	80%	-0.02288
-46	0.001509	0.007929	-0.00634	40%	-0.02137
-45	0.006538	0.004399	0.009153	45%	-0.01483
-44	-0.00758	-0.0129	-0.00107	65%	-0.02241
-43	0.006353	0.003112	0.010313	55%	-0.01605
-42	-0.00516	-0.01291	0.004314	45%	-0.02121
-41	0.009835	0.002022	0.019385	55%	-0.01138
-40	-0.00279	0.004041	-0.01113	45%	-0.01416
-39	0.000177	0.000326	-5.88E-06	55%	-0.01399
-38	-0.00966	-0.02272	0.00631	40%	-0.02364
-37	0.00632	0.015468	-0.00486	50%	-0.01732
-36	0.004591	0.029108	-0.02537	30%	-0.01273
-35	-0.00256	-0.00176	-0.00353	55%	-0.01529
-34	0.001785	-0.01466	0.021885	45%	-0.0135
-33	0.004676	-0.01118	0.024059	45%	-0.00883
-32	-0.00135	-0.00104	-0.00174	40%	-0.01018
-31	-0.00961	-0.00505	-0.01518	45%	-0.01979
-30	0.014427	-0.00021	0.03231	45%	-0.00536
-29	-0.0135	-0.00984	-0.01798	35%	-0.01887
-28	-0.00079	-0.00017	-0.00154	50%	-0.01965
-27	-0.01172	-0.00577	-0.01899	45%	-0.03137
-26	0.004376	-0.00296	0.013346	50%	-0.027
-25	-0.00638	-0.00666	-0.00602	45%	-0.03337

-24	-0.00631	0.021111	-0.03983	50%	-0.03968
-23	0.00225	-0.02007	0.02953	55%	-0.03743
-22	-0.00444	-0.01689	0.010787	40%	-0.04187
-21	-0.00287	0.002022	-0.00886	45%	-0.04475
-20	0.008391	0.009266	0.007321	50%	-0.03636
-19	-0.01426	0.005313	-0.03818	30%	-0.05062
-18	0.021043	0.001553	0.044863	60%	-0.02957
-17	-0.00059	-0.00534	0.005215	30%	-0.03016
-16	0.009475	0.020843	-0.00442	65%	-0.02069
-15	-0.01417	-0.03441	0.010579	35%	-0.03485
-14	-0.0102	-0.00332	-0.01861	35%	-0.04506
-13	-0.02268	-0.01089	-0.03708	20%	-0.06773
-12	0.001031	0.004592	-0.00332	45%	-0.0667
-11	0.014396	-0.00638	0.039788	45%	-0.05231
-10	-0.03204	-0.01635	-0.05122	40%	-0.08434
-9	-0.00394	-0.01834	0.013657	70%	-0.08828
-8	0.01838	0.034535	-0.00137	50%	-0.0699
-7	0.008557	0.013581	0.002418	35%	-0.06135
-6	0.002087	-0.00436	0.009963	40%	-0.05926
-5	0.000179	0.004488	-0.00509	40%	-0.05908
-4	0.006817	0.007622	0.005833	45%	-0.05226
-3	-0.00865	-0.01181	-0.00478	40%	-0.06091
-2	0.01597	-0.00062	0.036247	30%	-0.04494
-1	0.010073	0.022041	-0.00456	65%	-0.03487
0	-0.00716	0.010484	-0.02873	40%	-0.04203
1	0.002773	0.005484	-0.00054	60%	-0.03926
2	-0.00427	-0.0062	-0.00192	50%	-0.04353
3	0.007124	0.008795	0.005081	50%	-0.03641
4	0.003314	-0.01151	0.021431	50%	-0.03309
5	-0.0009	-0.01147	0.012003	35%	-0.034
6	-0.00435	-0.01135	0.00421	45%	-0.03835
7	-0.00501	-0.02263	0.016525	40%	-0.04336
8	0.013752	0.016427	0.010484	45%	-0.0296
9	0.002387	0.008824	-0.0072	55%	-0.02721
10	-0.00678	-0.01556	0.001424	45%	-0.03399
Average from day -60 to -6	-0.00107785	-0.001319218	-0.00078	-	-0.02961
Average from day -60 to -5	-0.00105541	-0.001215518	-0.00086	-	-0.03014
Average from day -60 to -1	-0.00058155	-0.000847267	-0.00026	-	-0.03135
Average from day -60 to +1	-0.00063355	-0.000562387	-0.00072	-	-0.03165
Average from	-0.00047906	-0.00112031	0.000245	-	-0.03214

day -60 to +10					

Table 6.17: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2009(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00591	-0.02949	-0.00175	35%	-0.00591
-59	-0.00472	-0.03066	-0.00014	45%	-0.01063
-58	0.001601	0.024426	-0.00243	45%	-0.00903
-57	-5.7E-05	-0.0004	2.70E-06	45%	-0.00908
-56	-0.0003	0.023826	-0.00456	55%	-0.00938
-55	-0.00267	-0.00956	-0.00146	40%	-0.01205
-54	-0.00398	-0.00758	-0.00334	55%	-0.01603
-53	0.00187	-0.02149	0.005993	60%	-0.01416
-52	0.008073	0.03513	0.003298	60%	-0.00609
-51	0.002393	0.019305	-0.00059	40%	-0.0037
-50	-0.00037	-0.02114	0.0033	55%	-0.00406
-49	-0.00772	-0.03911	-0.00218	60%	-0.01178
-48	0.007106	0.019538	0.004912	70%	-0.00468
-47	-0.0046	0.004341	-0.00618	45%	-0.00928
-46	-0.00177	-0.00117	-0.00188	35%	-0.01105
-45	0.002989	-0.01273	0.005763	60%	-0.00806
-44	0.00587	0.019768	0.003418	55%	-0.00219
-43	-0.00047	-0.00682	0.000652	50%	-0.00266
-42	-0.00421	0.005674	-0.00595	45%	-0.00687
-41	0.007136	0.062947	-0.00271	35%	0.000263
-40	0.004807	-0.00696	0.006883	60%	0.00507
-39	-8.1E-05	-0.01107	0.001858	50%	0.004989
-38	-0.00651	-0.01707	-0.00465	30%	-0.00152
-37	-0.00636	0.000987	-0.00766	40%	-0.00788
-36	-0.00275	0.006363	-0.00436	50%	-0.01063
-35	0.002407	0.002933	0.002314	60%	-0.00823
-34	-0.00173	-0.00305	-0.0015	40%	-0.00996
-33	-0.00442	-0.01587	-0.0024	50%	-0.01438
-32	-0.00076	0.010113	-0.00268	40%	-0.01514
-31	-0.00532	0.00641	-0.00739	30%	-0.02047
-30	0.004528	-0.00616	0.006414	55%	-0.01594
-29	-0.00963	-0.00026	-0.01128	20%	-0.02556
-28	-0.00145	0.001268	-0.00193	35%	-0.02701
-27	0.010547	0.009476	0.010736	80%	-0.01647
-26	-0.00741	-0.01155	-0.00668	45%	-0.02388
-25	0.002641	-0.00018	0.003138	45%	-0.02124
-24	-0.00587	-0.02358	-0.00274	30%	-0.02711

-23	-0.00377	-0.00037	-0.00437	45%	-0.03087
-22	-0.00604	0.001195	-0.00732	25%	-0.03691
-21	-0.00662	-0.00833	-0.00632	40%	-0.04353
-20	-0.00227	-0.00604	-0.0016	55%	-0.0458
-19	-0.00313	0.004574	-0.00448	50%	-0.04893
-18	-0.00658	-1.06E-03	-0.00755	45%	-0.0555
-17	-0.00683	-0.0377	-0.00138	35%	-0.06233
-16	0.005197	0.000903	0.005955	55%	-0.05713
-15	-0.00961	-0.03275	-0.00553	35%	-0.06674
-14	-0.00102	-0.00753	0.000133	45%	-0.06776
-13	-0.00305	0.022506	-0.00756	55%	-0.07081
-12	-0.00848	-0.00751	-0.00864	30%	-0.07928
-11	0.001051	0.027304	-0.00358	50%	-0.07823
-10	-0.00369	-0.0073	-0.00305	45%	-0.08192
-9	0.009306	-0.00268	0.011421	75%	-0.07262
-8	-0.00077	0.01467	-0.0035	50%	-0.07339
-7	-0.00269	0.008142	-0.0046	50%	-0.07608
-6	-0.00241	-0.00533	-0.00189	40%	-0.07849
-5	0.000734	-0.00037	0.000929	55%	-0.07775
-4	-0.00067	0.01156	-0.00282	55%	-0.07842
-3	-0.00293	-0.00472	-0.00261	45%	-0.08135
-2	-0.00468	-0.02229	-0.00157	25%	-0.08603
-1	-0.00345	0.008894	-0.00563	35%	-0.08948
0	0.007581	0.005406	0.007965	40%	-0.0819
1	-0.00918	-0.00067	-0.01068	40%	-0.09108
2	-0.0062	-0.01426	-0.00477	35%	-0.09728
3	-0.00953	-0.03717	-0.00465	30%	-0.1068
4	-0.00425	-0.00681	-0.0038	30%	-0.11106
5	0.001023	-0.00644	0.002341	50%	-0.11003
6	-0.00108	-0.00829	0.000196	35%	-0.11111
7	-0.00083	-0.02169	0.002856	50%	-0.11193
8	0.005198	0.033096	0.000275	65%	-0.10674
9	-0.00305	-0.01132	-0.00159	40%	-0.10978
10	-0.00012	0.00916	-0.00176	40%	-0.10991
Average from day -60 to -6	-0.00142738	-0.001103655	-0.00148	-	-0.0276
Average from day -60 to -5	-0.00138879	-0.001090554	-0.00144	-	-0.0285
Average from day -60 to -1	-0.0014917	-0.001127117	-0.00156	-	-0.03219
Average from day -60 to +1	-0.00146937	-0.001014371	-0.00155	-	-0.03394
Average from day -60	-0.00154845	-0.00178331	-0.00151	-	-0.04336

to +10					

Table 6.18: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2010(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.003484	0.004007	0.003203	55%	0.003484
-59	-0.00261	-0.00717	-0.00015	40%	0.000876
-58	-0.00685	-0.0178	-0.00096	45%	-0.00598
-57	0.003782	0.004597	0.003343	50%	-0.0022
-56	-0.00079	0.001939	-0.00225	50%	-0.00298
-55	0.004798	0.012351	0.000732	65%	0.001816
-54	0.004311	0.01012	0.001183	55%	0.006127
-53	-0.001	-0.00585	0.00162	40%	0.005132
-52	-0.00118	-0.0027	-0.00037	35%	0.00395
-51	-0.00226	-0.00525	-0.00066	45%	0.001686
-50	-0.00059	-0.00315	0.000788	60%	0.001097
-49	0.004501	0.00635	0.003506	65%	0.005598
-48	-0.00122	-0.0114	0.004268	45%	0.004382
-47	-0.00451	-0.00749	-0.00291	35%	-0.00013
-46	-0.00132	-0.00372	-2.1E-05	35%	-0.00145
-45	0.004508	0.012976	-5.1E-05	65%	0.003063
-44	0.001213	0.000967	0.001346	50%	0.004277
-43	-0.0003	-0.00275	0.00102	55%	0.003977
-42	0.004514	-0.00255	0.00832	75%	0.008491
-41	-0.00262	0.000524	-0.00432	45%	0.00587
-40	-0.00814	-0.00875	-0.00781	25%	-0.00227
-39	-0.00191	-0.00417	-0.0007	50%	-0.00418
-38	0.000925	-0.00235	0.002689	45%	-0.00326
-37	-0.00434	-0.00415	-0.00444	50%	-0.00759
-36	-0.00909	-0.0313	0.002871	45%	-0.01668
-35	-0.00299	-0.01142	0.001555	45%	-0.01967
-34	-0.00211	-0.00545	-0.00031	50%	-0.02178
-33	0.000304	-0.00787	0.004705	50%	-0.02147
-32	-0.00093	-0.00051	-0.00116	50%	-0.02241
-31	-0.00272	-0.00679	-0.00052	35%	-0.02512
-30	0.002841	0.00585	0.001222	60%	-0.02228
-29	0.00257	-0.00286	0.005493	60%	-0.01971
-28	-0.00436	-0.01283	0.000206	30%	-0.02407
-27	0.006106	0.02182	-0.00236	40%	-0.01796
-26	-0.00297	-0.00567	-0.00152	45%	-0.02094
-25	-0.00253	-0.00771	0.000256	55%	-0.02347
-24	0.002377	-0.00376	0.005679	65%	-0.02109
-23	0.000515	0.008122	-0.00358	30%	-0.02058

-22	0.000946	0.00192	0.000421	40%	-0.01963
-21	-0.00469	-0.00251	-0.00587	30%	-0.02433
-20	0.002627	-0.00137	0.004779	55%	-0.0217
-19	-0.00041	0.010111	-0.00607	45%	-0.02211
-18	0.001263	0.001344	0.00122	50%	-0.02084
-17	0.007159	0.004064	0.008826	75%	-0.01369
-16	-0.00694	-0.01201	-0.00421	35%	-0.02062
-15	0.000131	-0.00638	0.003636	35%	-0.02049
-14	-0.00195	-0.00046	-0.00276	40%	-0.02244
-13	-0.00134	-0.00577	0.001046	65%	-0.02378
-12	0.006841	0.013854	0.003064	60%	-0.01694
-11	0.001097	0.006127	-0.00161	60%	-0.01584
-10	-0.00165	5.73E-05	-0.00256	40%	-0.01749
-9	0.001211	-0.00168	0.002769	45%	-0.01628
-8	-0.00242	0.001656	-0.00462	30%	-0.0187
-7	0.000647	0.003579	-0.00093	50%	-0.01806
-6	0.000488	0.000327	0.000574	55%	-0.01757
-5	0.001353	0.003241	0.000337	60%	-0.01622
-4	0.002989	0.000177	0.004502	55%	-0.01323
-3	-0.00604	-0.00855	-0.00469	30%	-0.01927
-2	0.000236	0.012096	-0.00615	40%	-0.01903
-1	-0.00209	-0.00461	-0.00073	55%	-0.02112
0	-0.00461	8.27E-05	-0.00714	35%	-0.02573
1	0.009364	0.008059	0.010067	45%	-0.01637
2	-0.00177	0.001824	-0.00371	50%	-0.01814
3	0.001823	0.005931	-0.00039	60%	-0.01632
4	-0.00368	-0.00979	-0.00039	55%	-0.01999
5	-0.00312	-0.00128	-0.00411	50%	-0.02311
6	0.007549	-0.00032	0.011787	75%	-0.01556
7	0.000828	-0.00232	0.002522	40%	-0.01474
8	0.006581	0.001922	0.009089	60%	-0.00816
9	0.001679	0.003492	7.03E-04	55%	-0.00648
10	-0.00358	0.001953	-0.00656	25%	-0.01005
Average from day -60 to -6	-0.00031965	-0.001507958	0.00032	-	-0.01087
Average from day -60 to -5	-0.00028979	-0.001423155	0.000321	-	-0.01097
Average from day -60 to -1	-0.00035222	-0.001343062	0.000181	-	-0.01145
Average from day -60 to +1	-0.00026418	-0.001168419	0.000223	-	-0.01176
Average from day -60 to +10	-0.00014182	-0.001000423	0.00032	-	-0.01213

Table 6.19: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2006(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	-0.001	0.007	-0.004	45%	-0.001	0.007	-0.004
-59	-0.009	-0.010	-0.008	40%	-0.010	-0.004	-0.012
-58	-0.005	0.002	-0.007	30%	-0.015	-0.001	-0.019
-57	0.005	0.003	0.005	50%	-0.010	0.001	-0.014
-56	0.023	0.013	0.027	65%	0.013	0.014	0.013
-55	-0.013	-0.003	-0.016	30%	0.000	0.011	-0.003
-54	0.003	-0.007	0.007	50%	0.004	0.004	0.004
-53	-0.006	-0.006	-0.006	35%	-0.002	-0.002	-0.002
-52	0.018	0.001	0.024	55%	0.016	-0.001	0.022
-51	-0.005	-0.008	-0.004	30%	0.011	-0.010	0.018
-50	0.011	0.012	0.010	55%	0.022	0.002	0.028
-49	0.006	0.002	0.008	50%	0.028	0.004	0.036
-48	-0.016	0.012	-0.025	25%	0.012	0.016	0.011
-47	-0.002	0.010	-0.006	35%	0.010	0.026	0.005
-46	0.015	0.007	0.017	45%	0.025	0.032	0.022
-45	-0.013	-0.004	-0.016	40%	0.012	0.029	0.006
-44	-0.003	-0.011	0.000	35%	0.009	0.017	0.006
-43	0.004	0.006	0.003	35%	0.013	0.023	0.010
-42	0.002	-0.009	0.006	35%	0.015	0.014	0.016
-41	-0.019	-0.006	-0.023	35%	-0.003	0.008	-0.007
-40	0.012	0.001	0.016	50%	0.009	0.009	0.009
-39	0.011	0.022	0.008	45%	0.020	0.031	0.017
-38	-0.002	0.005	-0.004	45%	0.018	0.035	0.012
-37	-0.004	0.006	-0.007	40%	0.014	0.042	0.005
-36	-0.006	0.022	-0.016	35%	0.008	0.064	-0.011
-35	0.001	0.006	-0.001	50%	0.009	0.070	-0.012
-34	-0.005	-0.006	-0.004	45%	0.004	0.065	-0.016
-33	0.001	-0.003	0.002	40%	0.005	0.062	-0.014
-32	-0.007	0.002	-0.010	25%	-0.002	0.064	-0.024
-31	0.007	0.014	0.004	60%	0.005	0.078	-0.019
-30	0.007	0.006	0.007	35%	0.012	0.084	-0.012
-29	0.010	0.004	0.012	65%	0.022	0.088	0.000
-28	-0.008	0.001	-0.011	40%	0.014	0.089	-0.011
-27	0.012	0.012	0.012	40%	0.026	0.101	0.002
-26	0.014	0.000	0.019	50%	0.041	0.101	0.020
-25	0.003	0.012	0.000	55%	0.044	0.113	0.020

-24	0.004	-0.020	0.012	40%	0.048	0.094	0.033
-23	-0.013	-0.001	-0.017	40%	0.035	0.093	0.015
-22	-0.007	0.008	-0.012	60%	0.028	0.101	0.004
-21	-0.003	-0.017	0.002	25%	0.025	0.084	0.006
-20	0.000	0.006	-0.003	35%	0.025	0.090	0.003
-19	-0.003	0.016	-0.010	45%	0.021	0.107	-0.007
-18	0.011	0.008	0.012	60%	0.032	0.115	0.005
-17	0.002	-0.003	0.004	40%	0.034	0.112	0.008
-16	-0.006	-0.017	-0.003	40%	0.028	0.096	0.005
-15	0.004	-0.005	0.007	55%	0.032	0.091	0.012
-14	0.012	0.008	0.013	50%	0.043	0.099	0.025
-13	-0.002	-0.004	-0.002	40%	0.041	0.095	0.023
-12	-0.009	0.004	-0.013	35%	0.032	0.100	0.010
-11	0.002	0.012	-0.001	35%	0.034	0.112	0.008
-10	0.005	0.003	0.006	60%	0.039	0.115	0.014
-9	0.068	0.004	0.090	60%	0.108	0.119	0.104
-8	-0.020	0.014	-0.031	40%	0.088	0.133	0.073
-7	-0.002	0.005	-0.005	50%	0.085	0.138	0.068
-6	0.001	0.001	0.000	60%	0.086	0.139	0.068
-5	0.002	0.007	0.001	40%	0.088	0.146	0.069
-4	-0.001	0.002	-0.001	40%	0.088	0.147	0.068
-3	-0.008	0.011	-0.014	30%	0.080	0.158	0.054
-2	0.017	-0.003	0.023	40%	0.097	0.155	0.077
-1	-0.018	0.010	-0.027	50%	0.079	0.165	0.050
0	0.117	0.020	0.149	70%	0.196	0.185	0.200
1	0.099	0.119	0.092	60%	0.295	0.304	0.292
2	-0.011	0.002	-0.016	50%	0.284	0.306	0.276
3	-0.007	0.000	-0.009	35%	0.277	0.307	0.267
4	0.002	0.006	0.001	45%	0.279	0.313	0.268
5	0.003	-0.001	0.005	50%	0.282	0.311	0.273
6	-0.019	-0.003	-0.025	45%	0.263	0.309	0.248
7	-0.001	-0.001	-0.001	30%	0.262	0.308	0.247
8	-0.003	0.001	-0.005	45%	0.259	0.309	0.242
9	0.005	0.002	0.007	55%	0.264	0.311	0.249
10	0.001	0.011	-0.003	45%	0.265	0.322	0.246
Average from day -60 to -6	0.001545455	0.002490909	0.001236	0.438182	0.022945	0.060345	0.010527
Average from day -60 to -5	0.001553571	0.002571429	0.001232	0.4375	0.024107	0.061875	0.011571
Average from day -60 to -1	0.001283333	0.002733333	0.000833	0.435	0.028233	0.068167	0.01495

Average from day -60 to +1	0.004725806	0.004887097	0.004694	0.441935	0.035242	0.073855	0.022403
Average from day -60 to +10	0.003704225	0.004507042	0.003451	0.442254	0.06507	0.103873	0.052183

Table 6.20: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2007(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	0.003	0.007	0.000	55%	0.003	0.007	0.000
-59	0.006	0.003	0.008	60%	0.009	0.011	0.008
-58	-0.001	-0.010	0.005	35%	0.008	0.000	0.013
-57	0.005	0.011	0.001	65%	0.013	0.011	0.014
-56	0.006	0.006	0.006	65%	0.019	0.017	0.020
-55	0.002	0.001	0.003	45%	0.021	0.017	0.023
-54	-0.004	-0.015	0.004	45%	0.017	0.003	0.027
-53	0.020	0.036	0.009	65%	0.037	0.039	0.035
-52	0.002	0.005	0.000	40%	0.039	0.044	0.035
-51	-0.001	-0.007	0.003	40%	0.038	0.037	0.038
-50	-0.002	-0.006	0.001	35%	0.036	0.031	0.039
-49	0.005	0.021	-0.005	35%	0.041	0.051	0.034
-48	-0.006	-0.001	-0.010	45%	0.035	0.051	0.024
-47	0.004	-0.013	0.016	55%	0.039	0.037	0.040
-46	0.001	0.006	-0.001	60%	0.040	0.043	0.039
-45	-0.009	-0.021	-0.001	45%	0.031	0.022	0.038
-44	-0.003	-0.015	0.004	55%	0.028	0.007	0.042
-43	0.001	0.012	-0.006	40%	0.029	0.019	0.036
-42	0.003	-0.002	0.007	55%	0.033	0.017	0.043
-41	-0.011	-0.007	-0.013	50%	0.022	0.009	0.030
-40	0.004	0.019	-0.006	55%	0.026	0.028	0.025
-39	-0.005	-0.013	0.000	45%	0.021	0.015	0.024
-38	0.016	0.011	0.020	70%	0.037	0.026	0.044
-37	-0.004	0.000	-0.007	40%	0.033	0.026	0.038
-36	-0.009	0.008	-0.021	45%	0.024	0.034	0.017

-35	-0.005	-0.002	-0.006	65%	0.019	0.032	0.010
-34	0.001	0.000	0.001	55%	0.020	0.032	0.012
-33	0.004	0.004	0.003	55%	0.024	0.036	0.015
-32	0.007	0.013	0.003	70%	0.030	0.049	0.018
-31	0.001	-0.005	0.004	50%	0.031	0.044	0.022
-30	0.006	-0.001	0.010	65%	0.037	0.043	0.033
-29	0.005	0.003	0.007	55%	0.042	0.046	0.040
-28	-0.004	-0.012	0.001	40%	0.038	0.034	0.041
-27	-0.004	-0.005	-0.003	45%	0.034	0.029	0.038
-26	0.002	-0.002	0.004	50%	0.036	0.027	0.042
-25	0.001	-0.012	0.010	55%	0.037	0.015	0.052
-24	0.013	0.015	0.012	55%	0.050	0.030	0.063
-23	-0.011	-0.003	-0.016	40%	0.039	0.027	0.048
-22	-0.006	-0.013	-0.001	40%	0.033	0.014	0.046
-21	-0.006	-0.007	-0.005	45%	0.028	0.007	0.041
-20	-0.003	0.008	-0.009	40%	0.025	0.015	0.032
-19	-0.003	-0.001	-0.004	50%	0.022	0.013	0.027
-18	-0.008	-0.008	-0.008	50%	0.014	0.006	0.019
-17	-0.008	-0.014	-0.005	60%	0.005	-0.008	0.014
-16	-0.007	-0.021	0.002	65%	-0.001	-0.028	0.016
-15	0.004	0.020	-0.006	65%	0.003	-0.009	0.011
-14	-0.001	-0.017	0.009	55%	0.002	-0.025	0.020
-13	-0.011	-0.026	-0.001	30%	-0.010	-0.052	0.018
-12	0.003	0.016	-0.006	45%	-0.007	-0.035	0.012
-11	0.028	0.055	0.010	65%	0.021	0.019	0.022
-10	-0.004	-0.015	0.004	65%	0.017	0.004	0.026
-9	-0.003	0.005	-0.008	45%	0.014	0.009	0.018
-8	-0.003	0.013	-0.013	35%	0.012	0.022	0.005
-7	0.073	0.192	-0.006	45%	0.085	0.213	0.000
-6	0.002	-0.001	0.005	55%	0.087	0.212	0.004
-5	-0.004	-0.009	0.000	50%	0.083	0.203	0.004
-4	0.010	0.015	0.007	60%	0.094	0.217	0.011
-3	0.001	0.008	-0.003	45%	0.095	0.225	0.008
-2	-0.007	0.007	-0.015	40%	0.089	0.232	-0.007
-1	0.000	-0.005	0.002	50%	0.088	0.227	-0.004
0	0.299	0.062	0.456	75%	0.387	0.290	0.452
1	0.085	0.061	0.100	65%	0.472	0.351	0.552
2	0.000	-0.001	0.001	65%	0.472	0.350	0.553
3	0.002	0.005	-0.001	45%	0.474	0.355	0.553
4	0.000	-0.003	0.001	50%	0.473	0.352	0.554
5	0.003	0.012	-0.003	45%	0.476	0.364	0.550
6	0.004	0.007	0.002	55%	0.480	0.371	0.553
7	-0.007	-0.017	0.000	40%	0.473	0.354	0.552
8	-0.004	-0.004	-0.004	50%	0.469	0.349	0.548
9	-0.002	-0.010	0.003	60%	0.467	0.339	0.552
10	0.006	0.015	0.000	50%	0.473	0.354	0.552
Average from day -	0.001563636	0.003909091	9.09E-05	-	0.026655	0.025873	0.027109

60 to -6							
Average from day -60 to -5	0.001464286	0.003678571	8.93E-05	-	0.027661	0.029036	0.026696
Average from day -60 to -1	0.001433333	0.00385	-6.7E-05	-	0.031917	0.042117	0.02505
Average from day -60 to +1	0.007580645	0.005709677	0.008903	-	0.044742	0.051097	0.040435
Average from day -60 to +10	0.006647887	0.005042254	0.007761	-	0.099028	0.089521	0.105268

Table 6.21: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2008(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	0.007	0.012	-0.001	55%	0.007	0.012	-0.001
-59	0.000	-0.008	0.011	25%	0.006	0.004	0.009
-58	-0.006	0.004	-0.023	40%	0.000	0.009	-0.013
-57	-0.002	-0.004	0.002	55%	-0.002	0.005	-0.012
-56	-0.004	-0.004	-0.004	55%	-0.006	0.000	-0.016
-55	-0.013	-0.016	-0.008	35%	-0.019	-0.016	-0.024
-54	-0.012	0.019	-0.057	30%	-0.031	0.003	-0.081
-53	-0.034	-0.030	-0.040	40%	-0.064	-0.027	-0.121
-52	0.011	-0.016	0.051	55%	-0.053	-0.042	-0.069
-51	-0.012	-0.018	-0.003	55%	-0.065	-0.060	-0.072
-50	-0.022	-0.026	-0.017	40%	-0.087	-0.086	-0.090
-49	0.014	0.033	-0.013	40%	-0.073	-0.053	-0.103
-48	-0.005	-0.034	0.038	55%	-0.078	-0.087	-0.065

-47	0.011	0.037	-0.029	70%	-0.068	-0.050	-0.095
-46	-0.030	-0.020	-0.045	25%	-0.098	-0.070	-0.139
-45	-0.071	-0.025	-0.139	40%	-0.169	-0.095	-0.279
-44	-0.007	-0.017	0.007	30%	-0.176	-0.112	-0.272
-43	-0.027	-0.036	-0.014	30%	-0.203	-0.148	-0.286
-42	-0.013	-0.020	-0.004	45%	-0.216	-0.168	-0.290
-41	0.026	0.021	0.034	35%	-0.190	-0.147	-0.256
-40	0.005	0.003	0.009	55%	-0.185	-0.144	-0.247
-39	0.006	0.020	-0.015	40%	-0.179	-0.124	-0.262
-38	0.000	-0.009	0.014	50%	-0.179	-0.133	-0.248
-37	0.009	0.008	0.011	45%	-0.170	-0.125	-0.237
-36	0.008	-0.001	0.021	60%	-0.162	-0.127	-0.215
-35	-0.013	-0.016	-0.008	50%	-0.175	-0.142	-0.223
-34	-0.002	0.006	-0.014	45%	-0.177	-0.136	-0.238
-33	-0.016	-0.032	0.008	45%	-0.193	-0.169	-0.229
-32	-0.017	-0.020	-0.014	50%	-0.210	-0.188	-0.243
-31	-0.017	-0.021	-0.010	40%	-0.227	-0.209	-0.253
-30	-0.014	-0.024	0.000	40%	-0.241	-0.234	-0.253
-29	-0.017	-0.029	0.001	50%	-0.258	-0.262	-0.252
-28	-0.001	0.021	-0.034	45%	-0.259	-0.242	-0.286
-27	0.016	0.023	0.006	45%	-0.243	-0.218	-0.280
-26	-0.013	-0.019	-0.004	35%	-0.256	-0.238	-0.285
-25	0.017	-0.012	0.062	40%	-0.239	-0.250	-0.222
-24	0.007	0.027	-0.022	65%	-0.232	-0.223	-0.245
-23	0.032	0.019	0.053	50%	-0.199	-0.205	-0.192
-22	-0.001	0.048	-0.074	45%	-0.200	-0.156	-0.266
-21	-0.034	-0.065	0.013	50%	-0.234	-0.221	-0.252
-20	0.006	0.024	-0.022	55%	-0.228	-0.197	-0.274
-19	-0.013	-0.044	0.032	65%	-0.241	-0.241	-0.242
-18	0.008	0.017	-0.004	50%	-0.233	-0.225	-0.246
-17	-0.029	-0.060	0.017	55%	-0.262	-0.284	-0.229
-16	-0.053	-0.021	-0.102	30%	-0.316	-0.305	-0.331
-15	-0.001	-0.019	0.026	40%	-0.316	-0.324	-0.305
-14	-0.012	0.012	-0.047	40%	-0.328	-0.312	-0.352
-13	0.080	0.062	0.106	40%	-0.248	-0.250	-0.245
-12	-0.023	-0.036	-0.002	40%	-0.271	-0.286	-0.248
-11	-0.038	-0.025	-0.057	55%	-0.309	-0.311	-0.305
-10	0.064	0.008	0.148	55%	-0.245	-0.304	-0.156
-9	-0.013	-0.015	-0.009	60%	-0.257	-0.319	-0.165
-8	0.033	0.071	-0.025	45%	-0.225	-0.247	-0.190
-7	0.011	0.019	-0.003	50%	-0.214	-0.228	-0.193
-6	-0.030	-0.050	-0.001	35%	-0.245	-0.278	-0.194
-5	-0.028	0.016	-0.093	55%	-0.272	-0.262	-0.287
-4	0.120	0.123	0.116	50%	-0.152	-0.139	-0.171
-3	0.022	0.023	0.020	60%	-0.130	-0.116	-0.151
-2	-0.035	-0.025	-0.050	50%	-0.165	-0.141	-0.201
-1	0.056	0.093	0.001	65%	-0.109	-0.048	-0.200
0	0.366	0.123	0.731	90%	0.258	0.075	0.531
1	0.056	0.074	0.030	55%	0.314	0.149	0.562
2	-0.041	-0.009	-0.090	45%	0.273	0.140	0.472

3	0.010	-0.004	0.032	40%	0.283	0.136	0.504
4	-0.004	0.013	-0.029	20%	0.279	0.149	0.476
5	-0.003	0.004	-0.012	40%	0.277	0.152	0.463
6	0.023	0.022	0.025	50%	0.300	0.174	0.488
7	-0.054	-0.047	-0.066	40%	0.245	0.127	0.422
8	0.001	-0.009	0.015	50%	0.246	0.118	0.437
9	-0.015	-0.014	-0.017	35%	0.231	0.104	0.420
10	0.014	0.021	0.003	45%	0.244	0.125	0.424
Average from day -60 to -6	-0.00443636	-0.005054545	-0.00353	-	-0.17711	-0.16336	-0.19778
Average from day -60 to -5	-0.00485714	-0.004678571	-0.00513	-	-0.1788	-0.16513	-0.19938
Average from day -60 to -1	-0.00181667	-0.0008	-0.00333	-	-0.17615	-0.16152	-0.19813
Average from day -60 to +1	0.005048387	0.002403226	0.009048	-	-0.16124	-0.15269	-0.17411
Average from day -60 to +10	0.003436 62	0.00177 4648	0.00594 4	-	-0.10731	-0.11608	-0.09421

Table 6.22: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2009(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	-0.007	-0.013	-0.005	55%	-0.007	-0.013	-0.005
-59	0.006	0.011	0.004	60%	-0.001	-0.002	-0.001

-58	-0.009	-0.034	-0.003	35%	-0.011	-0.036	-0.005
-57	0.003	-0.018	0.008	55%	-0.008	-0.054	0.003
-56	-0.011	-0.016	-0.009	45%	-0.019	-0.070	-0.006
-55	0.027	0.156	-0.005	40%	0.008	0.086	-0.011
-54	0.000	-0.008	0.002	45%	0.008	0.078	-0.009
-53	0.004	0.002	0.004	45%	0.012	0.080	-0.005
-52	-0.035	-0.207	0.008	30%	-0.023	-0.128	0.003
-51	-0.024	-0.030	-0.023	25%	-0.047	-0.158	-0.020
-50	-0.021	-0.075	-0.008	40%	-0.068	-0.232	-0.028
-49	0.007	0.047	-0.002	55%	-0.061	-0.185	-0.030
-48	0.003	-0.015	0.008	45%	-0.058	-0.201	-0.022
-47	0.008	0.003	0.010	50%	-0.050	-0.198	-0.013
-46	-0.038	-0.133	-0.014	15%	-0.088	-0.331	-0.027
-45	-0.021	-0.087	-0.005	45%	-0.109	-0.419	-0.031
-44	-0.014	-0.008	-0.015	45%	-0.123	-0.427	-0.047
-43	-0.016	-0.049	-0.008	30%	-0.139	-0.476	-0.055
-42	-0.016	-0.035	-0.012	40%	-0.155	-0.511	-0.066
-41	-0.010	-0.012	-0.009	30%	-0.165	-0.522	-0.076
-40	-0.005	-0.004	-0.005	50%	-0.170	-0.527	-0.081
-39	0.015	0.015	0.015	60%	-0.155	-0.511	-0.066
-38	-0.013	-0.064	0.000	50%	-0.168	-0.575	-0.066
-37	-0.012	-0.014	-0.011	45%	-0.180	-0.590	-0.077
-36	-0.003	0.036	-0.013	35%	-0.183	-0.554	-0.090
-35	0.003	-0.032	0.012	50%	-0.179	-0.586	-0.078
-34	0.001	-0.001	0.001	35%	-0.179	-0.587	-0.077
-33	-0.005	0.002	-0.007	30%	-0.184	-0.585	-0.084
-32	0.012	0.048	0.004	40%	-0.172	-0.537	-0.080
-31	-0.018	-0.056	-0.009	35%	-0.190	-0.593	-0.089
-30	-0.001	-0.028	0.006	45%	-0.191	-0.621	-0.083
-29	0.071	0.409	-0.014	30%	-0.120	-0.212	-0.097
-28	-0.006	-0.034	0.001	35%	-0.126	-0.246	-0.096
-27	-0.011	-0.043	-0.002	35%	-0.137	-0.289	-0.098
-26	-0.015	-0.026	-0.012	25%	-0.151	-0.315	-0.110
-25	-0.009	-0.057	0.003	50%	-0.160	-0.372	-0.107
-24	-0.021	-0.098	-0.002	35%	-0.182	-0.470	-0.109
-23	-0.011	0.001	-0.014	40%	-0.192	-0.469	-0.123
-22	-0.008	-0.016	-0.006	30%	-0.200	-0.485	-0.129
-21	-0.009	-0.030	-0.004	45%	-0.209	-0.515	-0.133
-20	-0.033	-0.104	-0.015	45%	-0.242	-0.619	-0.148
-19	-0.004	-0.024	0.001	40%	-0.246	-0.642	-0.147
-18	-0.013	-0.002	-0.016	40%	-0.259	-0.644	-0.163
-17	0.014	0.068	0.001	75%	-0.245	-0.577	-0.162
-16	-0.021	-0.030	-0.018	30%	-0.266	-0.607	-0.181
-15	-0.036	-0.071	-0.027	20%	-0.302	-0.677	-0.208
-14	-0.015	-0.134	0.014	40%	-0.317	-0.811	-0.193
-13	-0.008	-0.010	-0.008	30%	-0.325	-0.822	-0.201
-12	-0.009	-0.012	-0.009	25%	-0.334	-0.834	-0.209
-11	0.027	0.135	0.000	45%	-0.307	-0.698	-0.209
-10	-0.030	-0.108	-0.011	35%	-0.337	-0.807	-0.220
-9	-0.015	-0.059	-0.004	45%	-0.352	-0.865	-0.224

-8	-0.014	-0.078	0.003	45%	-0.365	-0.944	-0.221
-7	-0.011	-0.005	-0.012	30%	-0.376	-0.949	-0.233
-6	0.003	0.031	-0.005	40%	-0.373	-0.918	-0.237
-5	-0.012	-0.048	-0.003	50%	-0.385	-0.966	-0.240
-4	0.010	0.022	0.007	50%	-0.376	-0.944	-0.233
-3	-0.003	-0.015	0.000	40%	-0.378	-0.959	-0.233
-2	0.001	-0.003	0.002	45%	-0.377	-0.962	-0.231
-1	0.009	0.068	-0.005	40%	-0.367	-0.894	-0.236
0	0.210	0.221	0.207	75%	-0.158	-0.673	-0.029
1	0.071	-0.012	0.092	55%	-0.087	-0.685	0.063
2	-0.006	0.000	-0.008	40%	-0.093	-0.685	0.055
3	-0.006	-0.012	-0.004	45%	-0.099	-0.697	0.051
4	-0.010	-0.015	-0.009	25%	-0.109	-0.711	0.042
5	-0.039	-0.143	-0.013	25%	-0.148	-0.855	0.029
6	0.060	0.238	0.015	50%	-0.088	-0.616	0.044
7	-0.002	-0.016	0.002	45%	-0.090	-0.633	0.046
8	-0.005	-0.008	-0.004	35%	-0.094	-0.641	0.042
9	0.008	0.094	-0.013	30%	-0.086	-0.547	0.029
10	0.029	0.167	-0.005	50%	-0.057	-0.380	0.024
Average from day -60 to -6	-0.0068	-0.016654545	-0.00431	-	-0.16687	-0.4504	-0.096
Average from day -60 to -5	-0.00689286	-0.017214286	-0.00429	-	-0.17077	-0.45964	-0.09857
Average from day -60 to -1	-0.00615	-0.014866667	-0.00393	-	-0.18435	-0.49162	-0.10755
Average from day -60 to +1	-0.00141935	-0.011016129	0.001016	-	-0.18235	-0.49766	-0.10353
Average from day -60 to +10	-0.00083099	-0.005323944	0.000338	-	-0.17141	-0.51577	-0.08531

Table 6.23: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in the U.S. in 2010(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	-0.006	-0.025	0.003	35%	-0.006	-0.025	0.003
-59	0.008	0.025	0.001	65%	0.003	0.001	0.004
-58	0.008	-0.006	0.014	30%	0.011	-0.005	0.017
-57	-0.016	0.002	-0.024	60%	-0.006	-0.003	-0.007
-56	-0.029	0.000	-0.041	60%	-0.034	-0.003	-0.048
-55	0.040	-0.008	0.060	35%	0.005	-0.012	0.013
-54	0.007	-0.018	0.017	55%	0.012	-0.030	0.030
-53	0.007	0.000	0.010	55%	0.019	-0.030	0.040
-52	0.002	-0.003	0.004	70%	0.021	-0.033	0.044
-51	-0.010	-0.020	-0.006	25%	0.011	-0.054	0.038
-50	-0.014	0.001	-0.021	30%	-0.004	-0.052	0.017
-49	0.015	0.006	0.019	65%	0.011	-0.047	0.036
-48	-0.001	-0.019	0.006	45%	0.010	-0.066	0.043
-47	-0.011	-0.004	-0.014	40%	-0.001	-0.070	0.029
-46	-0.001	-0.016	0.005	60%	-0.002	-0.086	0.034
-45	-0.006	-0.013	-0.003	40%	-0.008	-0.099	0.032
-44	0.008	0.012	0.006	50%	0.000	-0.088	0.038
-43	0.000	0.004	-0.002	50%	0.000	-0.083	0.036
-42	-0.001	0.014	-0.008	45%	-0.001	-0.069	0.028
-41	0.006	0.019	0.000	55%	0.005	-0.050	0.029
-40	0.000	-0.004	0.002	50%	0.005	-0.055	0.030
-39	-0.028	-0.022	-0.031	30%	-0.023	-0.077	-0.001
-38	-0.015	0.003	-0.022	55%	-0.038	-0.073	-0.023
-37	0.026	0.034	0.023	65%	-0.012	-0.040	0.000
-36	0.009	0.022	0.004	65%	-0.003	-0.018	0.004
-35	0.016	0.038	0.007	50%	0.014	0.020	0.011
-34	0.008	0.010	0.007	55%	0.022	0.030	0.018
-33	-0.035	-0.077	-0.017	25%	-0.013	-0.047	0.002
-32	0.001	-0.002	0.002	50%	-0.012	-0.049	0.004
-31	-0.009	-0.006	-0.010	25%	-0.021	-0.055	-0.006
-30	-0.009	-0.013	-0.007	40%	-0.030	-0.068	-0.013
-29	0.005	0.025	-0.004	50%	-0.025	-0.043	-0.017
-28	-0.016	-0.016	-0.016	55%	-0.041	-0.060	-0.033
-27	-0.002	-0.012	0.003	40%	-0.043	-0.072	-0.030
-26	-0.020	0.030	-0.042	55%	-0.063	-0.042	-0.072
-25	-0.011	-0.019	-0.007	35%	-0.074	-0.061	-0.080
-24	-0.004	0.005	-0.008	45%	-0.078	-0.056	-0.088
-23	0.012	0.033	0.003	55%	-0.066	-0.022	-0.085
-22	0.001	-0.013	0.007	50%	-0.065	-0.035	-0.078
-21	-0.002	0.022	-0.012	35%	-0.067	-0.014	-0.090
-20	-0.014	-0.012	-0.015	40%	-0.081	-0.025	-0.105

-19	0.005	0.056	-0.017	55%	-0.076	0.030	-0.122
-18	0.006	0.017	0.002	45%	-0.070	0.047	-0.120
-17	0.005	-0.010	0.011	65%	-0.065	0.038	-0.109
-16	-0.008	-0.024	0.000	45%	-0.073	0.013	-0.109
-15	-0.005	-0.027	0.004	50%	-0.078	-0.013	-0.105
-14	0.014	0.011	0.016	55%	-0.064	-0.002	-0.090
-13	0.013	0.010	0.014	65%	-0.051	0.007	-0.076
-12	0.012	0.053	-0.005	35%	-0.039	0.060	-0.081
-11	0.005	0.026	-0.004	55%	-0.033	0.086	-0.085
-10	0.008	-0.003	0.013	60%	-0.026	0.083	-0.072
-9	0.013	0.048	-0.002	50%	-0.013	0.131	-0.074
-8	-0.020	-0.037	-0.012	25%	-0.032	0.093	-0.086
-7	-0.006	0.002	-0.009	50%	-0.038	0.095	-0.095
-6	-0.005	-0.024	0.003	50%	-0.043	0.071	-0.092
-5	0.049	0.003	0.069	55%	0.006	0.074	-0.023
-4	0.010	0.014	0.008	70%	0.016	0.088	-0.015
-3	-0.003	0.001	-0.005	45%	0.013	0.089	-0.019
-2	0.006	0.027	-0.003	55%	0.019	0.116	-0.023
-1	0.046	0.122	0.014	80%	0.065	0.238	-0.009
0	0.308	0.180	0.362	95%	0.373	0.418	0.354
1	0.102	0.031	0.132	55%	0.475	0.449	0.486
2	0.002	0.006	0.000	55%	0.476	0.454	0.486
3	-0.049	-0.009	-0.066	35%	0.427	0.446	0.419
4	0.296	-0.006	0.426	40%	0.723	0.439	0.845
5	-0.024	0.003	-0.035	50%	0.699	0.442	0.810
6	0.053	0.001	0.075	50%	0.752	0.443	0.885
7	-0.002	0.002	-0.004	50%	0.750	0.445	0.880
8	-0.011	-0.002	-0.015	30%	0.739	0.443	0.865
9	-0.030	-0.006	-0.041	45%	0.709	0.437	0.825
10	-0.001	0.000	-0.002	35%	0.707	0.438	0.823
Average from day -60 to -6	-0.0008	0.00136 3636	-0.00169	-	-0.02489	-0.01867	-0.02749
Average from day -60 to -5	8.92857E-05	0.00139 2857	-0.00043	-	-0.02434	-0.01702	-0.02741
Average from day -60 to -1	0.001066 667	0.00403 3333	-0.00017	-	-0.02083	-0.00703	-0.02668
Average from day -60 to +1	0.007645 161	0.00730 6452	0.00780 6	-	-0.00648	0.007177	-0.01227

Average from day -60 to +10	0.009971831	0.006225352	0.011577	-	0.078592	0.062423	0.085592

Table 6.24: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2006(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00197	0.001194	-0.00367	40%	-0.00197
-59	-0.00759	-0.00584	-0.00853	25%	-0.00955
-58	-0.01152	-0.00209	-0.01659	40%	-0.02107
-57	-0.00336	-0.00119	-0.00453	35%	-0.02443
-56	0.003134	0.005812	0.001692	50%	-0.0213
-55	0.001227	0.001845	0.000894	55%	-0.02007
-54	-0.01669	0.005981	-0.0289	40%	-0.03676
-53	-0.01448	0.001529	-0.0231	40%	-0.05124
-52	-0.00523	-0.00027	-0.00791	50%	-0.05648
-51	-0.02634	-0.00126	-0.03985	55%	-0.08282
-50	-0.00378	-0.01188	0.000585	45%	-0.0866
-49	-0.00354	-0.00451	-0.00302	35%	-0.09014
-48	0.001724	0.006081	-0.00062	60%	-0.08841
-47	-0.00734	-0.00798	-0.007	35%	-0.09576
-46	0.027357	-0.00061	0.042417	60%	-0.0684
-45	-0.02654	0.008561	-0.04544	55%	-0.09494
-44	0.019536	-0.00433	0.032388	65%	-0.07541
-43	-0.00269	-0.00969	0.001085	35%	-0.07809
-42	-0.00335	0.001513	-0.00597	30%	-0.08145
-41	-0.00187	0.001442	-0.00365	25%	-0.08331
-40	-0.0027	0.004005	-0.00631	50%	-0.08601
-39	0.008245	0.005367	0.009795	45%	-0.07777
-38	0.004559	0.000411	0.006792	55%	-0.07321
-37	-0.00965	0.001833	-0.01584	45%	-0.08286
-36	0.003308	-0.00079	0.005511	60%	-0.07955
-35	8.51E-05	0.00275	-0.00135	40%	-0.07947
-34	-0.00199	-0.01418	0.004581	40%	-0.08145
-33	-0.00314	-0.00422	-0.00256	40%	-0.0846
-32	-0.0043	0.008268	-0.01107	50%	-0.0889
-31	0.005494	0.010732	0.002673	55%	-0.0834
-30	-0.00204	0.003382	-0.00495	45%	-0.08544
-29	0.001654	0.001718	0.001619	55%	-0.08379
-28	0.000283	0.002273	-0.00079	45%	-0.0835
-27	-7.5E-05	0.002445	-0.00143	45%	-0.08358

-26	-0.00609	0.000291	-0.00953	50%	-0.08967
-25	0.003955	0.006285	0.0027	55%	-0.08571
-24	-0.00427	0.000399	-0.00679	35%	-0.08999
-23	0.001401	-5.2E-05	0.002184	35%	-0.08858
-22	0.001872	0.0095	-0.00224	50%	-0.08671
-21	0.002065	-0.0025	0.004525	35%	-0.08465
-20	-0.00361	-0.00171	-0.00463	30%	-0.08826
-19	0.00446	0.002249	0.005651	40%	-0.0838
-18	-0.00039	0.000607	-0.00093	40%	-0.08419
-17	-0.00158	-0.00036	-0.00224	35%	-0.08577
-16	-0.00332	-0.00347	-0.00323	35%	-0.08909
-15	-0.01586	-0.00068	-0.02403	30%	-0.10494
-14	0.007327	-0.00366	0.013245	50%	-0.09761
-13	0.022126	-0.00136	0.034774	50%	-0.07549
-12	-0.01749	0.003837	-0.02898	50%	-0.09298
-11	0.024329	0.004211	0.035161	65%	-0.06865
-10	0.005707	0.001201	0.008133	65%	-0.06295
-9	-0.00794	0.002521	-0.01357	50%	-0.07089
-8	-0.01924	-0.01593	-0.02103	25%	-0.09013
-7	-0.0001	0.006037	-0.00341	45%	-0.09023
-6	-0.0149	-0.00518	-0.02013	40%	-0.10513
-5	-0.005	-0.00972	-0.00246	25%	-0.11014
-4	-0.00193	-0.00269	-0.00153	40%	-0.11207
-3	0.059629	0.002725	0.090269	70%	-0.05244
-2	-0.00042	-0.00044	-0.00041	55%	-0.05286
-1	0.001358	0.002013	0.001005	40%	-0.05151
0	0.006926	0.009376	0.005607	50%	-0.04458
1	0.011586	0.031401	0.000916	55%	-0.03299
2	-0.00373	0.005194	-0.00854	30%	-0.03673
3	-0.01853	0.002208	-0.0297	45%	-0.05526
4	0.004439	0.002366	0.005555	50%	-0.05082
5	0.006453	0.01314	0.002853	70%	-0.04436
6	0.00353	-0.00526	0.008263	30%	-0.04083
7	0.012362	-0.00246	0.020344	40%	-0.02847
8	0.0003	0.001964	-0.0006	40%	-0.02817
9		-0.00315		55%	
10		0.003252		50%	
Average from day -60 to -6	-0.0019114	0.0001916	-0.00304	0.446364	-0.07522
Average from day -60 to -5	-0.00196655	1.46071E-05	-0.00303	0.442857	-0.07584
Average from day -60 to -1	-0.00085817	4.04333E-05	-0.00134	0.4475	-0.07527
Average from day -60	-0.0005319	0.000696823	-0.00119	0.45	-0.07409

to +1					
Average from day -60 to +10	-0.00040803	0.000851507	-0.0011	0.450704	-0.0707

Table 6.25: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2007(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.001315	0.002708	-7.8E-05	35%	0.001315
-59	-0.00112	-0.00698	0.004742	50%	0.000197
-58	0.005153	-0.00118	0.011481	55%	0.00535
-57	0.002086	-0.00462	0.00879	40%	0.007436
-56	-0.00627	-0.00245	-0.01009	40%	0.00117
-55	-0.00106	0.000441	-0.00255	45%	0.000113
-54	0.00219	-0.00595	0.010332	50%	0.002303
-53	-0.00316	-0.00764	0.001325	45%	-0.00085
-52	-5.7E-05	-0.00114	0.001026	45%	-0.00091
-51	0.001162	-0.00336	0.005682	50%	0.00025
-50	-0.00371	-0.00742	-9.58E-06	45%	-0.00346
-49	-0.00022	-0.00031	-0.00012	50%	-0.00368
-48	0.004856	-0.00591	0.015622	55%	0.001178
-47	-0.00528	-0.00696	-0.0036	30%	-0.0041
-46	0.006715	0.010838	0.002591	60%	0.002613
-45	-0.00651	-0.0076	-0.00543	45%	-0.0039
-44	0.001321	0.001309	0.001332	55%	-0.00258
-43	-0.00696	-0.00517	-0.00875	25%	-0.00954
-42	-0.0026	-0.00471	-0.00048	45%	-0.01214
-41	-0.01033	-0.00515	-0.0155	30%	-0.02246
-40	0.010334	0.019757	0.000911	55%	-0.01213
-39	-0.00054	-0.00744	0.006353	45%	-0.01267
-38	-0.00322	-0.00119	-0.00525	35%	-0.01589
-37	0.005504	0.007543	0.003466	60%	-0.01039
-36	-0.00251	0.003792	-0.00881	60%	-0.0129
-35	0.006124	0.001015	0.011234	60%	-0.00677
-34	-0.00252	-0.00032	-0.00473	35%	-0.00929
-33	0.003249	0.001671	0.004827	60%	-0.00604
-32	-0.01131	-0.02278	0.00017	35%	-0.01735
-31	0.008014	0.01231	0.003718	55%	-0.00934
-30	0.001639	-0.00111	0.004391	50%	-0.0077
-29	0.004265	-0.00502	0.013546	60%	-0.00343
-28	-0.00203	-0.00562	0.001567	40%	-0.00546
-27	-0.00072	0.000386	-0.00183	45%	-0.00618
-26	0.004274	0.006387	0.002161	40%	-0.0019
-25	-0.01155	-0.0083	-0.0148	40%	-0.01345

-24	0.002054	0.007105	-0.003	60%	-0.0114
-23	0.012063	0.016345	0.00778	60%	0.000662
-22	-0.00293	-0.00706	0.001201	40%	-0.00227
-21	0.006465	0.011856	0.001073	65%	0.004196
-20	0.002634	-0.0068	0.012067	50%	0.006831
-19	0.001356	0.002436	0.000277	50%	0.008187
-18	-0.00413	-0.00927	0.001009	30%	0.004059
-17	-0.00462	-0.00644	-0.0028	25%	-0.00056
-16	0.001457	-0.00784	0.010752	55%	0.000894
-15	-0.00854	-0.01658	-0.0005	30%	-0.00765
-14	0.00035	0.002898	-0.0022	45%	-0.0073
-13	-0.01389	-0.02337	-0.00441	35%	-0.02119
-12	-0.00389	-0.01169	0.003915	45%	-0.02508
-11	-0.00263	0.000946	-0.0062	40%	-0.02771
-10	-0.00114	-0.00453	0.002256	50%	-0.02884
-9	-0.00077	-0.00683	0.005289	50%	-0.02961
-8	-0.00084	-0.00855	0.006856	50%	-0.03046
-7	-0.00038	-0.0007	-5.6E-05	40%	-0.03084
-6	0.000244	-0.00632	0.006807	55%	-0.03059
-5	-0.001	-0.00249	0.000498	55%	-0.03159
-4	-0.00123	-0.00814	0.005676	40%	-0.03282
-3	0.002399	-0.0004	0.005196	40%	-0.03042
-2	-0.00434	-0.00374	-0.00493	55%	-0.03475
-1	2.34E-05	-0.00788	0.007929	45%	-0.03473
0	-0.00438	0.005407	-0.01417	45%	-0.03911
1	0.013902	0.01402	0.013785	60%	-0.02521
2	0.005245	0.002537	0.007952	65%	-0.01996
3	-0.00073	0.001484	-0.00293	45%	-0.02069
4	0.003625	0.006595	0.000655	65%	-0.01706
5	0.00525	0.004383	0.006116	65%	-0.01181
6	0.012363	0.017244	0.007482	55%	0.000548
7	0.001098	-0.00213	0.004324	65%	0.001646
8	-0.00914	-0.02231	0.004024	35%	-0.0075
9	-0.00515	0.00364	-0.01394	40%	-0.01265
10	-0.00092	0.006944	-0.00879	35%	-0.01357
Average from day -60 to -6	-0.0005566	-0.002446673	0.001334	-	-0.00766
Average from day -60 to -5	-0.00056452	-0.002447446	0.001319	-	-0.00809
Average from day -60 to -1	-0.00057934	-0.002620283	0.001462	-	-0.00976
Average from day -60 to +1	-0.00040707	-0.002222419	0.001409	-	-0.01048
Average from	-	-	0.001299	-	-0.01058

day -60 to +10	0.00019152	0.001681732			

Table 6.26: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2008(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.01581	-0.01377	-0.02401	40%	-0.01581
-59	0.004113	0.0154	-0.04104	60%	-0.0117
-58	0.002306	-0.00299	0.023491	50%	-0.0094
-57	-0.00603	-0.00887	0.005338	40%	-0.01543
-56	-0.00368	-0.00061	-0.01597	40%	-0.01911
-55	0.013038	0.014415	0.007527	60%	-0.00607
-54	0.002699	0.00618	-0.01123	25%	-0.00337
-53	-0.00331	-0.00531	0.0047	55%	-0.00668
-52	0.005259	0.006028	0.002185	65%	-0.00142
-51	-0.01178	-0.01339	-0.00536	35%	-0.0132
-50	-0.01151	-0.00837	-0.02409	50%	-0.02472
-49	-0.00055	0.001192	-0.00752	45%	-0.02527
-48	-0.00094	-0.00261	0.005721	40%	-0.02621
-47	0.00941	0.009457	0.00922	45%	-0.0168
-46	-0.00032	-0.00028	-0.00047	45%	-0.01712
-45	0.009143	0.008829	0.010402	65%	-0.00798
-44	-0.00982	-0.01043	-0.00738	55%	-0.01779
-43	0.006258	0.003361	0.017847	55%	-0.01154
-42	-0.01026	-0.01343	0.002419	35%	-0.0218
-41	0.012711	0.009432	0.025827	30%	-0.00909
-40	-0.00208	-0.00774	0.02059	45%	-0.01117
-39	-0.00284	0.001177	-0.01892	60%	-0.01401
-38	-0.00057	0.002575	-0.01313	45%	-0.01458
-37	0.010491	0.015082	-0.00787	50%	-0.00409
-36	-0.00459	0.001587	-0.02931	25%	-0.00868
-35	-0.00273	0.006786	-0.04079	70%	-0.01141
-34	0.004362	0.000539	0.019655	60%	-0.00705
-33	0.016086	-0.0048	0.099616	45%	0.00904
-32	-0.00038	0.00299	-0.01387	30%	0.008659
-31	-0.01566	-0.00062	-0.07581	55%	-0.007
-30	0.005451	-0.00813	0.059764	40%	-0.00155
-29	-0.01089	-0.01437	0.003034	45%	-0.01244
-28	-0.00287	0.013969	-0.07021	55%	-0.0153
-27	-0.00472	-0.00235	-0.01419	55%	-0.02002
-26	0.003929	0.002495	0.009667	55%	-0.01609
-25	-0.01073	-0.00893	-0.01794	40%	-0.02683
-24	0.002532	0.013491	-0.04131	60%	-0.0243
-23	0.005887	0.0035	0.015436	70%	-0.01841

-22	-0.00868	-0.00268	-0.03267	60%	-0.02709
-21	-0.00189	-0.00578	0.013666	50%	-0.02898
-20	0.004895	0.004788	0.005323	55%	-0.02408
-19	-0.01731	-0.01217	-0.03788	30%	-0.0414
-18	0.020981	0.002808	0.09367	55%	-0.02042
-17	-0.00533	0.002392	-0.03624	40%	-0.02575
-16	0.010297	0.005297	0.030294	60%	-0.01545
-15	-0.01163	-0.01211	-0.0097	40%	-0.02708
-14	-0.01733	-0.01957	-0.00837	35%	-0.04441
-13	-0.01141	-0.00969	-0.0183	40%	-0.05582
-12	0.001012	0.006719	-0.02181	45%	-0.05481
-11	0.008556	-0.01868	0.117504	35%	-0.04625
-10	-0.03467	-0.01386	-0.11792	45%	-0.08092
-9	0.00517	0.002112	0.017404	75%	-0.07575
-8	0.030696	0.038182	0.000753	75%	-0.04506
-7	0.003761	0.007163	-0.00985	45%	-0.0413
-6	0.000737	0.001026	-0.00042	40%	-0.04056
-5	0.001616	0.003287	-0.00507	55%	-0.03894
-4	0.002611	0.001504	0.007039	55%	-0.03633
-3	-0.01276	-0.01703	0.004319	40%	-0.04909
-2	0.024616	0.005826	0.099776	50%	-0.02448
-1	0.014631	0.01812	0.000675	55%	-0.00985
0	-0.01301	-0.01788	0.006488	45%	-0.02286
1	0.003792	0.011764	-0.02809	50%	-0.01906
2	-0.00507	-0.00965	0.013262	40%	-0.02413
3	0.005875	0.006539	0.003221	55%	-0.01826
4	0.000806	-0.00287	0.015495	50%	-0.01745
5	0.000204	0.001162	-0.00363	40%	-0.01725
6	-0.00252	0.003534	-0.02673	35%	-0.01977
7	-0.00192	-0.00367	0.005063	45%	-0.02169
8	0.024145	0.028423	0.007034	65%	0.002452
9		0.004528		35%	
10		-0.01972		45%	
Average from day -60 to -6	-0.00073709	-0.000228509	-0.00277	-	-0.02129
Average from day -60 to -5	-0.00069507	-0.000165732	-0.00281	-	-0.0216
Average from day -60 to -1	-0.00016377	-1.435E-05	-0.00076	-	-0.02216
Average from day -60 to +1	-0.00030716	-0.000112532	-0.00109	-	-0.02212
Average from day -60 to +10	3.5841E-05	1.82958E-05	-0.00078	-	-0.02156

Table 6.27: Daily average returns (AAR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2009(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00537	-0.01682	-0.00155	45%	-0.00537
-59	-0.00627	-0.02764	0.000849	40%	-0.01164
-58	0.001706	0.014275	-0.00248	45%	-0.00994
-57	0.001001	-0.00383	0.00261	60%	-0.00893
-56	0.002146	0.017125	-0.00285	50%	-0.00679
-55	-0.00243	-0.00976	8.18E-06	35%	-0.00922
-54	-0.00315	0.00174	-0.00478	55%	-0.01237
-53	-0.00138	-0.01409	0.002862	50%	-0.01375
-52	0.008647	0.022457	0.004044	60%	-0.0051
-51	0.007067	0.006182	0.007362	45%	0.001968
-50	0.003213	-0.00645	0.006433	60%	0.00518
-49	-0.00403	-0.0174	0.000424	60%	0.001148
-48	0.008811	0.022441	0.004267	65%	0.009959
-47	-0.00358	0.004111	-0.00614	45%	0.006383
-46	0.001881	0.000634	0.002297	40%	0.008264
-45	0.005703	-0.00806	0.01029	60%	0.013967
-44	0.013044	0.027313	0.008287	60%	0.02701
-43	0.003543	0.009031	0.001713	55%	0.030553
-42	-0.00583	0.00027	-0.00787	40%	0.024718
-41	0.010113	0.032815	0.002545	55%	0.034831
-40	0.004218	-0.00616	0.007677	50%	0.03905
-39	0.001013	0.002231	0.000607	50%	0.040063
-38	-0.004	-0.01149	-0.0015	45%	0.036064
-37	-0.00819	-0.00358	-0.00973	35%	0.027871
-36	-0.00024	0.008341	-0.0031	50%	0.027634
-35	0.000876	-0.00801	0.003837	55%	0.02851
-34	-0.00324	-0.00223	-0.00357	35%	0.025272
-33	0.001806	-0.01306	0.006759	60%	0.027078
-32	-0.00331	0.008877	-0.00737	55%	0.023772
-31	-0.00361	0.002612	-0.00569	30%	0.02016
-30	0.006425	-0.0032	0.009635	55%	0.026585
-29	-0.01091	-0.01139	-0.01075	15%	0.015677
-28	0.00465	0.010795	0.002602	50%	0.020327
-27	0.01067	0.015684	0.008999	70%	0.030996
-26	-0.00235	-0.00905	-0.00011	50%	0.02865
-25	0.004266	-0.00156	0.006208	55%	0.032915
-24	-0.00536	-0.01457	-0.00229	45%	0.027552
-23	-0.00067	0.005521	-0.00273	35%	0.026885
-22	-0.00396	-0.0039	-0.00398	35%	0.022926
-21	-0.00242	-0.00201	-0.00256	45%	0.020504
-20	-0.00086	-0.00554	0.0007	60%	0.019645

-19	-0.00292	-0.00293	-0.00291	35%	0.016729
-18	-0.00719	-0.00361	-0.00839	45%	0.009536
-17	-0.00648	-0.02128	-0.00154	40%	0.003059
-16	0.009154	0.00255	0.011356	55%	0.012213
-15	-0.00824	-0.02026	-0.00424	40%	0.003969
-14	0.00077	0.000826	0.000752	45%	0.004739
-13	-0.00232	0.012144	-0.00713	60%	0.002424
-12	-0.01097	-0.01116	-0.01091	25%	-0.00855
-11	0.003834	0.005774	0.003187	55%	-0.00471
-10	-0.00194	-0.00313	-0.00155	45%	-0.00666
-9	0.012578	0.003042	0.015757	75%	0.005923
-8	0.000743	0.010072	-0.00237	45%	0.006666
-7	-0.00205	0.006438	-0.00488	55%	0.004617
-6	-0.00144	-0.00541	-0.00011	45%	0.00318
-5	0.000971	-0.00128	0.001721	60%	0.004152
-4	0.001873	0.005367	0.000709	60%	0.006025
-3	-0.00084	0.009769	-0.00437	40%	0.005186
-2	-0.00253	-0.00856	-0.00052	35%	0.002657
-1	-0.00176	0.004321	-0.00378	40%	0.000901
0	0.006784	0.004607	0.00751	45%	0.007685
1	-0.00609	-0.01301	-0.00378	45%	0.001599
2	-0.00643	-0.01175	-0.00466	20%	-0.00484
3	-0.0069	-0.01588	-0.00391	45%	-0.01174
4	-3.2E-05	-0.00621	0.002026	60%	-0.01177
5	0.001907	-0.00513	0.004252	60%	-0.00986
6	0.000465	-0.0014	0.001084	55%	-0.0094
7	0.00118	-0.01128	0.005335	40%	-0.00822
8	0.006864	0.020232	0.002408	65%	-0.00135
9	-0.00053	-0.00034	-0.00059	40%	-0.00188
10	0.000717	0.008661	-0.00193	45%	-0.00116
Average from day -60 to -6	5.76E-05	-0.000259618	0.000163	-	0.012766
Average from day -60 to -5	7.39107E-05	-0.000277839	0.000191	-	0.012612
Average from day -60 to -1	1.47E-05	-7.77E-05	4.58E-05	-	0.012018
Average from day -60 to +1	2.54194E-05	-0.000210726	0.000104	-	0.01178
Average from day -60 to +10	-1.6662E-05	-0.000509324	0.000148	-	0.009438

Table 6.28: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in the U.S. in 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	0.001722	0.005263	-0.00485	40%	0.001722
-59	0.00096	0.004675	-0.00594	55%	0.002682
-58	-0.00866	-0.01115	-0.00403	40%	-0.00598
-57	0.003978	0.004203	0.00356	65%	-0.002
-56	0.000746	0.002605	-0.00271	45%	-0.00126
-55	0.006678	0.007815	0.004566	60%	0.005423
-54	0.00448	0.00513	0.003272	55%	0.009903
-53	-0.00117	-0.00138	-0.00079	35%	0.008729
-52	-7E-05	-0.00158	0.002734	50%	0.008659
-51	-0.00243	-0.00193	-0.00336	45%	0.006227
-50	-0.00098	-0.00129	-0.00041	50%	0.005248
-49	0.004631	0.004811	0.004298	65%	0.00988
-48	-0.00179	-0.00288	0.000232	40%	0.008091
-47	-0.00354	-0.0047	-0.00139	45%	0.004547
-46	-0.00045	-0.00237	0.003113	50%	0.004098
-45	0.003138	0.006714	-0.0035	60%	0.007236
-44	0.000603	0.00397	-0.00565	55%	0.007839
-43	-0.00035	0.00088	-0.00262	60%	0.007493
-42	0.003101	0.000467	0.007993	65%	0.010594
-41	-0.00311	-0.00127	-0.00652	35%	0.007484
-40	-0.0061	-0.00589	-0.00648	50%	0.001384
-39	-0.00104	0.000943	-0.00472	45%	0.000345
-38	0.002384	-0.00185	0.01024	50%	0.002729
-37	-0.00321	-0.00096	-0.00741	45%	-0.00048
-36	-0.00865	-0.01032	-0.00556	50%	-0.00914
-35	-0.00239	-0.0057	0.003774	45%	-0.01152
-34	-0.00123	-0.00435	0.004555	50%	-0.01275
-33	-0.00152	-0.00321	0.001614	50%	-0.01428
-32	0.000485	0.001667	-0.00171	50%	-0.01379
-31	-0.00223	-0.0031	-0.00062	30%	-0.01602
-30	0.002416	0.001648	0.003843	65%	-0.01361
-29	0.002834	0.00078	0.006649	55%	-0.01077
-28	-0.00358	-0.0083	0.005196	35%	-0.01435
-27	0.00679	0.01143	-0.00183	45%	-0.00756
-26	-0.00152	-0.00414	0.003344	55%	-0.00908
-25	-0.0028	-0.0015	-0.0052	55%	-0.01188
-24	0.002502	0.000261	0.006662	60%	-0.00937
-23	0.000396	0.0021	-0.00277	20%	-0.00898
-22	0.003215	0.005996	-0.00195	45%	-0.00576
-21	-0.00653	-0.00523	-0.00894	20%	-0.01229
-20	0.002162	0.002865	0.000855	45%	-0.01013
-19	0.000946	0.000773	0.001267	45%	-0.00918
-18	0.002337	0.001377	0.004122	40%	-0.00684
-17	0.00745	0.009333	0.003953	60%	0.000605

-16	-0.00703	-0.00846	-0.00437	30%	-0.00643
-15	-0.00039	-0.00219	0.002951	35%	-0.00681
-14	-0.00205	-0.00353	0.000699	40%	-0.00887
-13	-0.00189	-0.00257	-0.00062	55%	-0.01076
-12	0.008264	0.008662	0.007524	65%	-0.00249
-11	0.001957	0.00704	-0.00748	65%	-0.00054
-10	0.000396	0.000705	-0.00018	50%	-0.00014
-9	-0.00037	-0.00171	0.002112	35%	-0.00051
-8	-0.00194	-0.00036	-0.00487	35%	-0.00244
-7	0.000417	0.001965	-0.00246	50%	-0.00203
-6	-2.3E-05	0.002661	-0.00501	60%	-0.00205
-5	0.000776	0.002471	-0.00237	40%	-0.00128
-4	0.003387	-0.00071	0.010987	60%	0.002112
-3	-0.0046	-0.00332	-0.00697	35%	-0.00249
-2	-0.00039	0.002538	-0.00584	40%	-0.00288
-1	-0.00076	-0.00203	0.001611	65%	-0.00364
0	-0.00375	-0.0005	-0.00979	35%	-0.00739
1	0.010529	0.01812	-0.00357	50%	0.003138
2	-0.00061	0.000347	-0.0024	55%	0.002524
3	0.00259	-0.00101	0.009271	60%	0.005114
4	-0.00432	-0.00824	0.002967	50%	0.000796
5	-0.00091	0.006664	-0.01498	45%	-0.00012
6	0.008418	0.010922	0.003767	70%	0.008302
7	0.00206	0.003319	-0.00028	45%	0.010362
8	0.006444	0.010868	-0.00177	65%	0.016807
9	0.002193	0.002093	0.002378	55%	0.018999
10	-0.00218	-0.00034	-0.00562	40%	0.016815
Average from day -60 to -6	-3.73636E-05	8.76182E-05	-0.00027	-	-0.00253
Average from day -60 to -5	-2.2839E-05	0.000130179	-0.00031	-	-0.00251
Average from day -60 to -1	-6.07E-05	0.0000628	-0.00029	-	-0.00246
Average from day -60 to +1	5.05968E-05	0.000344968	-0.0005	-	-0.00245
Average from day -60 to +10	0.00023693	0.000648042	-0.00053	-	-0.00101

Table 6.60: The names and announcement dates for both the target and acquiring firms in the U.S in 2006

Target	**Bidder**	**Announcement date**	**Industry**

UST0601	USB0601	2006	Consumer Products and Services
UST0602	USB0602	2006	Materials
UST0603	USB0603	2006	High Technology
UST0604	USB0604	2006	Financials
UST0605	USB0605	2006	Consumer Products and Services
UST0606	USB0606	2006	Financials
UST0607	USB0607	2006	Consumer Products and Services
UST0608	USB0608	2006	Financials
UST0609	USB0609	2006	High Technology
UST0610	USB0610	2006	Healthcare
UST0611	USB0611	2006	Retail
UST0612	USB0612	2006	Financials
UST0613	USB0613	2006	Financials
UST0614	USB0614	2006	Healthcare
UST0615	USB0615	2006	Financials
UST0616	USB0616	2006	Materials
UST0617	USB0617	2006	Healthcare
UST0618	USB0618	2006	High Technology
UST0619	USB0619	2006	High Technology
UST0620	USB0620	2006	Healthcare

Table 6.61: The names and announcement dates for both the target and acquiring firms in the U.S in 2007

Target	**Bidder**	**Announcement date**	**Industry**
UST0701	USB0701	2007	High Technology
UST0702	USB0702	2007	Financials
UST0703	USB0703	2007	Healthcare
UST0704	USB0704	2007	Financials
UST0705	USB0705	2007	Industrials
UST0706	USB0706	2007	Energy and Power
UST0707	USB0707	2007	Consumer Products and Services
UST0708	USB0708	2007	Financials
UST0709	USB0709	2007	High Technology
UST0710	USB0710	2007	Retail
UST0711	USB0711	2007	Healthcare
UST0712	USB0712	2007	High Technology
UST0713	USB0713	2007	Financials
UST0714	USB0714	2007	Financials
UST0715	USB0715	2007	Financials
UST0716	USB0716	2007	Industrials
UST0717	USB0717	2007	Materials
UST0718	USB0718	2007	High Technology
UST0719	USB0719	2007	Consumer Products and Services
UST0720	USB0720	2007	High Technology

Table 6.62: The names and announcement dates for both the target and acquiring firms in the U.S in 2008

Target	**Bidder**	**Announcement date**	**Industry**

UST0801	USB0801	2008	Healthcare
UST0802	USB0802	2008	Healthcare
UST0803	USB0803	2008	Financials
UST0804	USB0804	2008	High Technology
UST0805	USB0805	2008	High Technology
UST0806	USB0806	2008	Real Estate
UST0807	USB0807	2008	Industrials
UST0808	USB0808	2008	Healthcare
UST0809	USB0809	2008	High Technology
UST0810	USB0810	2008	High Technology
UST0811	USB0811	2008	Healthcare
UST0812	USB0812	2008	High Technology
UST0813	USB0813	2008	High Technology
UST0814	USB0814	2008	Consumer Products and Services
UST0815	USB0815	2008	Financials
UST0816	USB0816	2008	Telecommunications Wireless
UST0817	USB0817	2008	Healthcare
UST0818	USB0818	2008	Real Estate
UST0819	USB0819	2008	High Technology
UST0820	USB0820	2008	Materials

Table 6.63: The names and announcement dates for both the target and acquiring firms in the U.S in 2009

Target	**Bidder**	**Announcement date**	**Industry**
UST0901	USB0901	2009	Industrials
UST0902	USB0902	2009	High Technology
UST0903	USB0903	2009	Financials
UST0904	USB0904	2009	Telecommunications
UST0905	USB0905	2009	Energy and Power
UST0906	USB0906	2009	Financials
UST0907	USB0907	2009	Energy and Power
UST0908	USB0908	2009	High Technology
UST0909	USB0909	2009	Financials
UST0910	USB0910	2009	Materials
UST0911	USB0911	2009	Industrials
UST0912	USB0912	2009	Telecommunications
UST0813	USB0913	2009	Consumer Products and Services
UST0914	USB0914	2009	Consumer Staples
UST0915	USB0915	2009	High Technology
UST0916	USB0916	2009	High Technology
UST0917	USB0917	2009	Industrials
UST0918	USB0918	2009	High Technology
UST0919	USB0919	2009	High Technology
UST0920	USB0920	2009	Consumer Products and Services

Table 6.64: The names and announcement dates for both the target and acquiring firms in the U.S in 2010

Target	**Bidder**	**Announcement date**	**Industry**
UST1001	USB1001	2010	Telecommunications
UST1002	USB1002	2010	Consumer Products and Services

UST1003	USB1003	2010	High Technology
UST1004	USB1004	2010	High Technology
UST1005	USB1005	2010	Real Estate
UST1006	USB1006	2010	Industrials
UST1007	USB1007	2010	Retail
UST1008	USB1008	2010	Energy and Power
UST1009	USB1009	2010	Healthcare
UST1010	USB1010	2010	Telecommunications
UST1011	USB1011	2010	Healthcare
UST1012	USB1012	2010	Financials
UST1013	USB1013	2010	Energy and Power
UST1014	USB1014	2010	High Technology
UST1015	USB1015	2010	High Technology
UST1016	USB1016	2010	Healthcare
UST1017	USB1017	2010	Healthcare
UST1018	USB1018	2010	Financials
UST1019	USB1019	2010	Energy and Power
UST1020	USB1020	2010	Consumer Staples

Table 6.65: The firms' names and the days on which the firms have abnormal returns in the U.S 2006

Target	**Note for the Target**	**coefficient**	**t-statistic**	**Bidder**	**Note for the Bidder**	**coefficient**	**t-statistic**
UST0601	+1 day	0.1647703	9.46	USB0601	Nothing		
UST0603	Nothing			USB0603	Nothing		
UST0604	Nothing			USB0604	Nothing		
UST0613	Nothing			USB0613	Nothing		
UST0606	Nothing			USB0606	Nothing		
UST0618	Nothing			USB0618	Nothing		
UST0614	-41 day	-0.082747	-3.23	USB0614	-22 day	0.018881	3.34
	+1 day	0.1866326	8.30		-21 day	0.030609	5.41
UST0602	-36 day	0.116685	2.78	USB0602	Nothing		
UST0619	+1 day	0.1549818	5.55	USB0619	-8 day	-0.06954	-5.48
UST0612	Nothing			USB0612	Nothing		
UST0605	Nothing			USB0605	Nothing		
UST0611	-48 day	0.09446	2.64	USB0611	+1 day	0.100292	8.41
	-11 day	0.1081841	3.04				
	+1 day	0.1725583	5.05				
UST0609	Nothing			USB0609	+1 day	0.135941	6.75
					+5 day	0.091414	4.53
UST0615	Nothing			USB0615	Nothing		
UST0610	+1 day	0.2094946	6.66	USB0610	Nothing		
UST0607	-42 day	-0.048816	-2.39	USB0607	Nothing		
	-9 day	0.0817382	4.14				
	-5 day	0.0418523	2.12				
	+1 day	0.1052927	5.46				
UST0616	Nothing			USB0616	+2 day	0.052754	2.16
UST0617	-38 day	0.0475973	2.73	USB0617	Nothing		
	-29 day	0.0423176	2.49				
	-28 day	0.0351221	2.06				

	-25 day	-0.034837	-2.04				
	+1 day	0.1272702	8.44				
UST0608	+1 day	0.1444263	16.74	USB0608	+1 day	-0.06721	-11.79
	+2 day	0.0205882	2.38		+2 day	0.021636	3.79
UST0620	+1 day	0.4464343	21.03	USB0620	-43 day	-0.04575	-3.31

Table 6.66: The firms' names and the days on which the firms have abnormal returns in the U.S 2007

Target	**Note for the Target**	**coefficient**	**t-statistic**	**Bidder**	**Note for the Bidder**	**coefficient**	**t-statistic**
UST0709	Nothing			USB0709	-32 day	-0.1541	-7.57
UST0708	Nothing			USB0708	-29 day	-0.0530	-7.82
					-26 day	-0.0604	-8.91
					-23 day	0.0641	8.16
UST0710	Nothing			USB0710	Nothing		
UST0716	Nothing			USB0716	Nothing		
UST0707	Nothing			USB0707	Nothing		
UST0701	Nothing			USB0701	-23 day	0.0792	3.78
					-16 day	-0.0425	-1.97
					-14 day	-0.0532	-2.68
					-13 day	-0.0719	-3.61
					-12 day	-0.0464	-2.30
					-11 day	-0.0559	-2.81
					-10 day	0.0443	2.23
					-1 day	-0.0609	-2.89
					0 day	0.0421	1.99
UST0704	+1 day	1.100967	45.44	USB0704	Nothing		
UST0714	-4 day	-0.06128	-3.07	USB0714	-57 day	0.0324	3.01
	-1 day	-0.06743	-3.32		-56 day	0.0411	3.84
	0 day	0.210716	10.55		-55 day	-0.0348	-3.20
UST0706	-37 day	-0.06008	-2.85	USB0706	Nothing		
UST0702	Nothing			USB0702	-27 day	0.0554	3.67
					-26 day	0.0472	3.11
					-25 day	0.0333	2.20
UST0713	-16 day	-0.15209	-4.45	USB0713	-14 day	-0.0292	-2.66
					-13 day	-0.0371	-3.43
	-15 day	-0.07924	-2.32		-10 day	-0.0417	-3.85
	-3 day	0.069536	1.97		-4 day	-0.0358	-3.21
	-2 day	0.084090	2.38		0 day	0.0348	3.12
					+1 day	0.0788	7.84
	+1 day	0.194603	5.82		+3 day	0.0275	2.69
UST0712	Nothing			USB0712	-24 day	0.0419	2.97
					-23 day	0.0343	2.42
					-20 day	-0.0314	-2.22
UST0703	Nothing			USB0703	Nothing		
UST0719	-9 day	-0.12461	-4.32	USB0719	-34 day	0.0476	2.82
	-8 day	0.059353	2.02		-31 day	0.0475	2.81

	-7 day	1.407552	48.92		+8 day	-0.1032	-6.68
					+10 day	0.0566	3.66
UST0715	-49 day	0.257104	5.13	USB0715	Nothing		
UST0720	Nothing			USB0720	Nothing		
UST0705	Nothing			USB0705	Nothing		
UST0717	-24 day	0.182138	5.43	USB0717	+1 day	0.0704	2.14
UST0718	-27 day	-0.11168	-2.78	USB0718	Nothing		
	-21 day	-0.10994	-2.91				
	-20 day	0.152235	4.03				
UST0711	-53 day	0.444668	6.99	USB0711	Nothing		
	-17 day	-0.18549	-2.60				
	-11 day	0.322263	4.68				
	-8 day	0.153370	2.17				
	-7 day	0.151526	2.14				

Table 6.67: The firms' names and the days on which the firms have abnormal returns in the U.S 2008

Target	**Note for the Target**	**coefficient**	**t-statistic**	**Bidder**	**Note for the Bidder**	**coefficient**	**t-statistic**
UST0817	Nothing			USB0817	-28 day	0.0706	2.20
					+1 day	0.0764	2.44
					+4 day	0.0884	2.82
UST0801	Nothing			USB0801	-23 day	-0.1718	-3.53
					-20 day	0.1007	2.10
UST0815	-18 day	0.083192	3.04	USB0815	+6 day	0.2466	3.70
	-6 day	0.098260	3.57				
	-4 day	-0.06487	-2.33				
UST0816	-21 day	-0.18894	-2.09	USB0816	-19 day	0.0579	3.82
					+1 day	0.0289	1.97
	+1 day	1.040067	22.25		+4 day	0.0295	1.98
UST0810	Nothing			USB0810	-31 day	-0.1216	-3.68
					+1 day	-0.0982	-3.05
					+5 day	0.1191	3.61
UST0819	-24 day	0.091505	3.03	USB0819	Nothing		
UST0807	-33 day	-0.15727	-2.38	USB0807	-29 day	-0.1162	-2.15
	-29 day	-0.15884	-2.45		-28 day	-0.1770	-3.32
	-25 day	-0.14497	-2.17				
					-2 day	0.1704	3.22
	-24 day	0.178818	3.45				
					-1 day	0.1578	2.91
	-23 day	0.509461	9.82				

	-22 day	0.179107	3.46				
UST0803	-53 day	-0.12675	-2.45	USB0803	-4 day	-0.1369	-3.95
	-12 day	-0.25978	-5.30		0 day	0.1971	5.80
	-6 day	-0.12038	-2.33				
	-4 day	0.146694	2.91		+4 day	-0.0783	-2.03
	-3 day	0.183142	3.65				
UST0806	-18 day	-0.31292	-2.07	USB0806	-46 day	0.1311	2.17
	-17 day	-0.59144	-3.90		-39 day	0.1157	2.00
	-14 day	0.390891	2.62		-38 day	-0.1300	-2.13
	-13 day	0.651435	4.39		-37 day	0.1930	3.33
	-12 day	-0.34822	-2.35		-9 day	-0.3161	-6.88
	-8 day	1.29248	10.06		-8 day	0.4590	9.99
	-7 day	0.349656	2.76		-6 day	0.0947	2.08
UST0802	-47 day	0.379208	17.43	USB0802	+1 day	0.0421	3.11
					+3 day	-0.0744	-5.40
					+4 day	-0.0477	-3.60
					+5 day	0.0711	4.89
UST0820	Nothing			USB0820	Nothing		
UST0818	-21 day	0.082885	2.37	USB0818	+1 day	0.1393	4.55
	-20 day	0.124048	3.62				
	-19 day	-0.17320	-5.35				
	-17 day	-0.07747	-2.39		+5 day	0.0902	2.92
	0 day	0.107392	2.94				
	+2 day	0.100821	2.93				
UST0808	Nothing			USB0808	-37 day	-0.0365	-3.34
					-36 day	-0.0243	-2.27
					-35 day	0.0599	5.33
					-23 day	-0.0358	-3.16
					-22 day	-0.0322	-2.84
UST0812	Nothing			USB0812	+1 day	-0.0515	-3.20
					+5 day	-0.0523	-3.21
UST0811	-32 day	-0.29302	-7.58	USB0811	-32 day	-0.0364	-3.38
					-31 day	-0.0244	-2.31
	-30 day	0.131923	3.32		-30 day	0.0595	5.36
	-1 day	0.221429	5.40		-18 day	-0.0358	-3.20
	0 day	0.110813	2.70		-17 day	-0.0323	-2.88
					+2 day	-0.0299	-2.59
UST0813	-4 day	0.678479	5.94	USB0813	Nothing		
UST0809	-36 day	-0.45935	-4.17	USB0809	Nothing		
	-6 day	-0.55488	-5.18				
	-1 day	0.246413	2.14				
	0 day	0.642534	6.25				
UST0805	-3 day	0.086960	2.77	USB0805	-38 day	-0.0514	-2.74
	0 day	0.270692	8.69		-36 day	0.1384	7.40
UST0814	+1 day	-0.34266	-14.71	USB0814	-16 day	0.0332	1.99
	+2 day	-0.06146	-2.64				
UST0804	Nothing			USB0804	+7 day	0.1233	4.15

Table 6.68: The firms' names and the days on which the firms have abnormal returns in the U.S 2009

Target	**Note for the Target**	**coefficient**	**t-statistic**	**Bidder**	**Note for the Bidder**	**coefficient**	**t-statistic**
UST0919	+1 day	0.322801	11.59	USB0919	Nothing		
UST0901	Nothing			USB0901	Nothing		
UST0902	Nothing			USB0902	Nothing		
UST0909	Nothing			USB0909	Nothing		
UST0908	Nothing			USB0908	Nothing		
UST0914	Nothing			USB0914	Nothing		
UST0905	-52 day	-0.86227	-5.99	USB0905	Nothing		
	-48 day	0.703047	4.76				
	-45 day	-0.29859	-2.02				
	+6 day	1.001762	7.17				
UST0903	-14 day	-0.22118	-3.44	USB0903	-49 day	-0.1749	-5.58
UST0906	-48 day	-0.27359	-5.96	USB0906	Nothing		
	-1 day	0.320714	7.34				
UST0910	+1 day	0.475689	12.60	USB0910	-59 day	-0.0744	-1.98
					-58 day	0.0745	1.98
UST0913	Nothing			USB0913	Nothing		
UST0918	Nothing			USB0918	Nothing		
UST0912	Nothing			USB0912	+6 day	0.0319	2.63
UST0911	-29 day	1.590638	5.01	USB0911	Nothing		
UST0920	+6 day	0.256558	14.09	USB0920	Nothing		
UST0904	Nothing			USB0904	-41 day	0.1602	8.91
UST0916	+1 day	0.243317	7.33	USB0916	+1 day	-0.0847	-4.00
UST0915	Nothing			USB0915	Nothing		
UST0917	Nothing			USB0917	Nothing		
UST0907	Nothing			USB0907	Nothing		

Table 6.69: The firms' names and the days on which the firms have abnormal returns in the U.S 2010

Target	**Note for the Target**	**coefficient**	**t-statistic**	**Bidder**	**Note for the Bidder**	**coefficient**	**t-statistic**
UST1020	Nothing			UST1020	-31 day	-0.0577	-5.32
UST1001	-43 day	0.036265	2.21	USB1001	Nothing		
	-41 day	0.125649	7.67				
	-40 day	0.057958	3.54				
UST1014	-12 day	0.304533	9.36	USB1014	-3 day	-0.0333	-3.04

UST1004	-1 day	0.564801	7.40	USB1004	-57 day	0.0341	2.49
	0 day	0.242175	3.17				
UST1009	+1 day	0.308957	5.08	USB1009	+3 day	-0.0390	-2.43
					+4 day	-0.0322	-2.00
					+5 day	-0.0336	-2.08
UST1011	+3 day	-0.89967	-4.24	USB1011	-36 day	-0.2402	-12.02
	+4 day	5.988618	28.25		-35 day	-0.1101	-5.51
	+5 day	-0.43896	-2.07		-17 day	0.0878	3.25
UST1005	Nothing			USB1005	Nothing		
UST1006	Nothing			USB1006	-58 day	-0.1274	-10.92
					-53 day	-0.0300	-2.02
					-48 day	-0.0317	-2.14
UST1002	+1 day	1.569238	12.05	USB1002	Nothing		
UST1003	Nothing			USB1003	-33 day	-0.0226	-2.03
UST1010	Nothing			USB1010	Nothing		
UST1017	Nothing			UST1017	Nothing		
UST1007	-58 day	0.074602	3.50	USB1007	Nothing		
	-48 day	-0.07729	-3.79				
	-46 day	-0.07678	-3.76				
	-18 day	0.074994	3.56				
	-1 day	0.093194	4.50				
UST1016	-44 day	0.248946	8.03	USB1016	+6 day	0.0360	2.89
	-3 day	0.075176	2.20		+7 day	0.0866	6.95
	0 day	0.116901	3.42		+8 day	0.0369	2.95
UST1015	Nothing			USB1015	+1 day	0.0724	3.27
UST1013	+9 day	-0.07611	-3.58	USB1013	+2 day	-0.0549	-4.63
					+3 day	-0.0477	-4.04
					+4 day	-0.0312	-2.64
					+5 day	0.0736	6.21
	+10 day	0.097601	4.62		+6 day	0.0453	3.38
					+8 day	0.0440	3.27
UST1012	Nothing			USB1012	+3 day	0.0286	2.26
					+4 day	0.0251	1.98
UST1008	Nothing			USB1008	+1 day	0.0593	4.10
UST1018	Nothing			USB1018	Nothing		
UST1019	-33 day	-0.40197	-7.95	USB1019	-27 day	0.1475	4.88
	-32 day	0.118456	2.34				

Table 6.76: Augmented Dicky-Fuller test in the targets and bidders in U.S 2006

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
UST0601/stationary	0.00	USB0601/stationary	0.00
UST0602/stationary	0.00	USB0602/stationary	0.00
UST0603/stationary	0.00	USB0603/stationary	0.00
UST0604/stationary	0.00	USB0604/stationary	0.00
UST0605/stationary	0.00	USB0605/stationary	0.00
UST0606/stationary	0.00	USB0606/stationary	0.00
UST0607/stationary	0.00	USB0607/stationary	0.00
UST0608/stationary	0.00	USB0608/stationary	0.00
UST0609/stationary	0.00	USB0609/stationary	0.00
UST0610/stationary	0.00	USB0610/stationary	0.00
UST0611/stationary	0.00	USB0611/stationary	0.00
UST0612/stationary	0.00	USB0612/stationary	0.00
UST0613/stationary	0.00	USB0613/stationary	0.00
UST0614/stationary	0.00	USB0614/stationary	0.00
UST0615/stationary	0.00	USB0615/stationary	0.00
UST0616/stationary	0.00	USB0616/stationary	0.00
UST0617/stationary	0.00	USB0617/stationary	0.00
UST0618/stationary	0.00	USB0618/stationary	0.00
UST0619/stationary	0.00	USB0619/stationary	0.00
UST0620/stationary	0.00	USB0620/stationary	0.00

Table 6.77: Augmented Dicky-Fuller test in the targets and bidders in U.S 2007

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
UST0701/stationary	0.00	USB0701/stationary	0.00
UST0702/stationary	0.00	USB0702/stationary	0.00
UST0703/stationary	0.00	USB0703/stationary	0.00
UST0704/stationary	0.00	USB0704/stationary	0.00
UST0705/stationary	0.00	USB0705/stationary	0.00
UST0706/stationary	0.00	USB0706/stationary	0.00
UST0707/stationary	0.00	USB0707/stationary	0.00
UST0708/stationary	0.00	USB0708/stationary	0.00
UST0709/stationary	0.00	USB0709/stationary	0.00
UST0710/stationary	0.00	USB0710/stationary	0.00
UST0711/stationary	0.00	USB0711/stationary	0.00
UST0712/stationary	0.00	USB0712/stationary	0.00
UST0713/stationary	0.00	USB0713/stationary	0.00
UST0714/stationary	0.00	USB0714/stationary	0.00
UST0715/stationary	0.00	USB0715/stationary	0.00
UST0716/stationary	0.00	USB0716/stationary	0.00
UST0717/stationary	0.00	USB0717/stationary	0.00
UST0718/stationary	0.00	USB0718/stationary	0.00
UST0719/stationary	0.00	USB0719/stationary	0.00
UST0720/stationary	0.00	USB0720/stationary	0.00

Table 6.78: Augmented Dicky-Fuller test in the targets and bidders in U.S 2008

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
UST0801/stationary	0.00	USB0801/stationary	0.00
UST0802/stationary	0.00	USB0802/stationary	0.00
UST0803/stationary	0.00	USB0803/stationary	0.00
UST0804/stationary	0.00	USB0804/stationary	0.00
UST0805/stationary	0.00	USB0805/stationary	0.00
UST0806/stationary	0.00	USB0806/stationary	0.00
UST0807/stationary	0.00	USB0807/stationary	0.00
UST0808/stationary	0.00	USB0808/stationary	0.00
UST0809/stationary	0.00	USB0809/stationary	0.00
UST0810/stationary	0.00	USB0810/stationary	0.00
UST0811/stationary	0.00	USB0811/stationary	0.00
UST0812/stationary	0.00	USB0812/stationary	0.00
UST0813/stationary	0.00	USB0813/stationary	0.00
UST0814/stationary	0.00	USB0814/stationary	0.00
UST0815/stationary	0.00	USB0815/stationary	0.00
UST0816/stationary	0.00	USB0816/stationary	0.00
UST0817/stationary	0.00	USB0817/stationary	0.00
UST0818/stationary	0.00	USB0818/stationary	0.00
UST0819/stationary	0.00	USB0819/stationary	0.00
UST0820/stationary	0.00	USB0820/stationary	0.00

Table 6.79: Augmented Dicky-Fuller test in the targets and bidders in U.S 2009

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
UST0901/stationary	0.00	USB0901/stationary	0.00
UST0902/stationary	0.00	USB0902/stationary	0.00
UST0903/stationary	0.00	USB0903/stationary	0.00
UST0904/stationary	0.00	USB0904/stationary	0.00
UST0905/stationary	0.00	USB0905/stationary	0.00
UST0906/stationary	0.00	USB0906/stationary	0.00
UST0907/stationary	0.00	USB0907/stationary	0.00
UST0908/stationary	0.00	USB0908/stationary	0.00
UST0909/stationary	0.00	USB0909/stationary	0.00
UST0910/stationary	0.00	USB0910/stationary	0.00
UST0911/stationary	0.00	USB0911/stationary	0.00
UST0912/stationary	0.00	USB0912/stationary	0.00
UST0913/stationary	0.00	USB0913/stationary	0.00
UST0914/stationary	0.00	USB0914/stationary	0.00
UST0915/stationary	0.00	USB0915/stationary	0.00

UST0916/stationary	0.00	USB0916/stationary	0.00
UST0917/stationary	0.00	USB0917/stationary	0.00
UST0918/stationary	0.00	USB0918/stationary	0.00
UST0919/stationary	0.00	USB0919/stationary	0.00
UST0920/stationary	0.00	USB0920/stationary	0.00

Table 6.80: Augmented Dicky-Fuller test in the targets and bidders in U.S 2010

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
UST1001/stationary	0.00	USB1001/stationary	0.00
UST1002/stationary	0.00	USB1002/stationary	0.00
UST1003/stationary	0.00	USB1003/stationary	0.00
UST1004/stationary	0.00	USB1004/stationary	0.00
UST1005/stationary	0.00	USB1005/stationary	0.00
UST1006/stationary	0.00	USB1006/stationary	0.00
UST1007/stationary	0.00	USB1007/stationary	0.00
UST1008/stationary	0.00	USB1008/stationary	0.00
UST1009/stationary	0.00	USB1009/stationary	0.00
UST1010/stationary	0.00	USB1010/stationary	0.00
UST1011/stationary	0.00	USB1011/stationary	0.00
UST1012/stationary	0.00	USB1012/stationary	0.00
UST1013/stationary	0.00	USB1013/stationary	0.00
UST1014/stationary	0.00	USB1014/stationary	0.00
UST1015/stationary	0.00	USB1015/stationary	0.00
UST1016/stationary	0.00	USB1016/stationary	0.00
UST1017/stationary	0.00	USB1017/stationary	0.00
UST1018/stationary	0.00	USB1018/stationary	0.00
UST1019/stationary	0.00	USB1019/stationary	0.00
UST1020/stationary	0.00	USB1020/stationary	0.00

Chapter 7 Insider trading in domestic China M&As from 2006 to 2010

Section 7.1 Introduction

Chapter 7 is the analysis of insider trading with China data. The models and method used in this chapter are the same those used in Chapter 5 and Chapter 6. The only difference is the limitation in the data collection. Only 18 firms remain in this analysis, and 31 firms are dropped. Furthermore, only three filters are applied in this chapter. The initiative was to include the news search as a second filter of insider trading, however, there is no English news found with Nexis regarding to the Chinese firms involved in this study. The reason could be that China is not as open as the western countries, and therefore, the information especially the rumours would not be as transparent as those of U.K and U.S.

Section 7.2 Data and Model

The sample and data collection

In this chapter, a sample of 18 stocks listed on the Shanghai and Shenzhen Stock Exchange was gathered in total for a five year period from 2006 to 2010. The sample contains 18 targets and 18 bidders. Table 7.1 shows the number of firms initially collected and the number of firms after adjustment. 31 firms are dropped due to the following reasons: (i): some stocks are exchanged in the Hong Kong stock market and therefore are exchanged with U.S. dollars. In this chapter, only the stocks exchanged with Chinese Yuan remain in the database. (ii): for some firms, some of the daily returns are missing. (iii): due to the information limitation, some of the Chinese firms are not included in Datastream. The daily turnover is collected with Datastream. However, there are still some firms whose daily turnovers cannot be found. This might due to the imperfection of the database.

Table 7.1 Summary statistics for the sample of 19 target firms in China acquisitions for the period 2006-2010

Year	Number of M&A	Number of M&A firms	Number of turnovers collected

	firms initially collected	after adjustment	
2006	13	2	2
2007	9	6	6
2008	18	7	6
2009	8	3	2
2010	2	0	0
Total	50	19	16

Source: Author's calculations

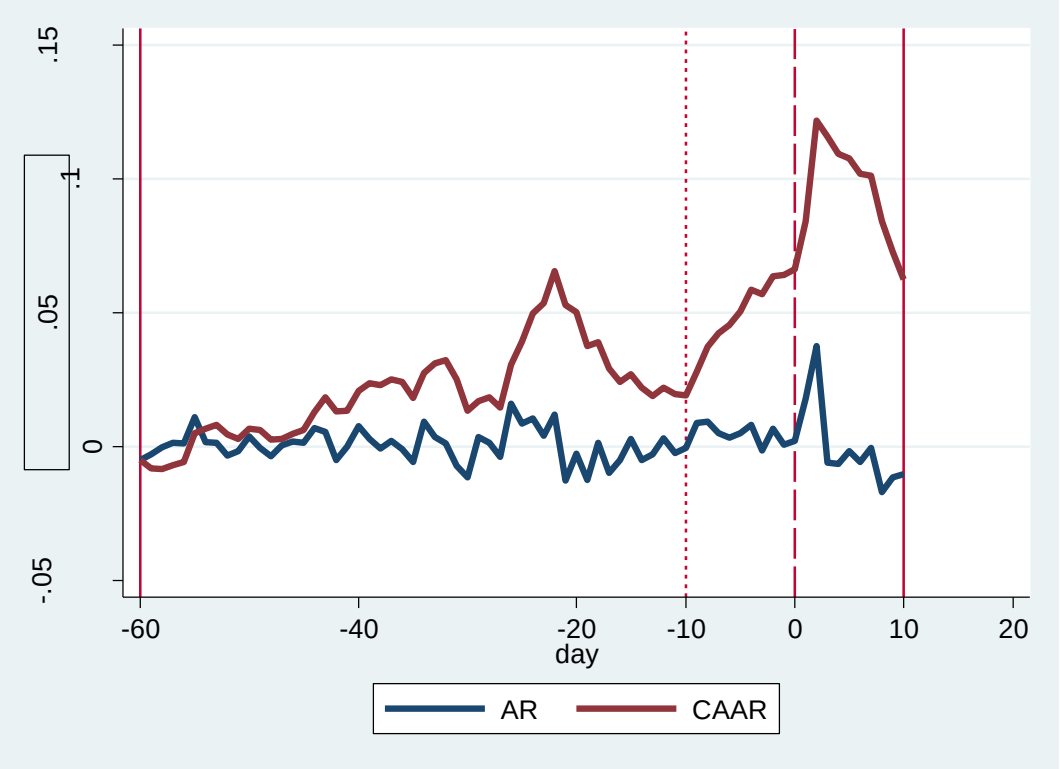
Table 7.17 in the appendix show the names, announcement dates and industries of the 18 target firms and the 18 acquiring firms. The data was collected from the same source as the U.K and U.S.

Section 7.3 Empirical Results

Section 7.3.1 The analysis of AR and CAAR before the three-filter approach

In this Section, both the AR and CAAR are presented to give a general idea of the M&A stocks in the Chinese stock market from 2006 to 2010. Graph 7.1 below is the AR and CAAR in China from 2006 to 2010.

Graph 7.1: the AR and CAAR in China from 2006 to 2010



Graph 7.1 shows the pattern of CAAR and AR from days -60 to +10 relative to the announcement date. The AR is fluctuating about 0 before the merger announcement. However, in regard to the CAAR, an increasing trend can be observed from the beginning of the event window. From -25 onwards, the CAAR decreases sharply until day -10 after which a more pronounced increasing trend is observed. Since the plot of AR and CAAR show that there is a sign of CAAR buidup prior to the merger announcement, insider trading is a potential problem in China.

Section 7.3.2The results of the first filter-the dummy variable approach for the targets

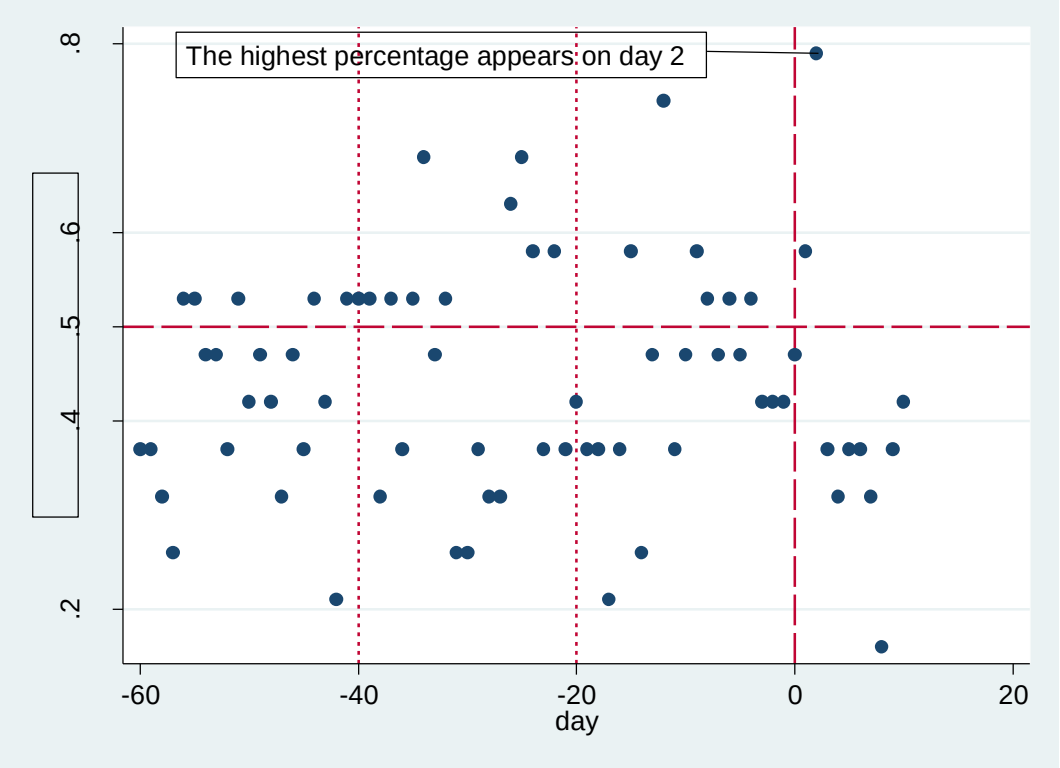
Table 7.2 shows the results of the daily average returns (AR) of the total, the suspected and the clean firms respectively and cumulative average abnormal returns (CAAR) of the total firms for China from 2006 to 2010. The percent of daily residuals which are positive,out of the total firms is also calculated. The results are from the market model. The results from the market adjusted model and the modified market model are included in the appendix. Although there are slight differences in the results from the three models, when plot them in graphs, the graphs are identical.

Tables 7.2: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in China from 2006 to 2010(from the market model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00518	0.00104	-0.0097	37%	-0.00518
-59	-0.00301	0.006829	-0.01016	37%	-0.00819
-58	-0.0002	-0.00297	0.001807	32%	-0.00839
-57	0.001421	0.003724	-0.00025	26%	-0.00697
-56	0.001129	0.012152	-0.00689	53%	-0.00584
-55	0.010889	0.013636	0.008891	53%	0.00505
-54	0.001598	0.013188	-0.00683	47%	0.006648
-53	0.001388	0.00443	-0.00082	47%	0.008036
-52	-0.00349	-0.00298	-0.00387	37%	0.004541
-51	-0.00177	-0.00328	-0.00068	53%	0.002767
-50	0.003824	0.002866	0.004521	42%	0.006591
-49	-0.00042	-0.00395	0.00214	47%	0.006168
-48	-0.00359	-0.00386	-0.00339	42%	0.002581
-47	0.000363	0.003755	-0.0021	32%	0.002944
-46	0.001889	0.003223	0.000919	47%	0.004833
-45	0.0013	-0.00537	0.006148	37%	0.006133
-44	0.006803	-0.00309	0.013999	53%	0.012936
-43	0.005393	0.010708	0.001527	42%	0.018329
-42	-0.00513	-0.01022	-0.00142	21%	0.013203
-41	5.45E-05	0.005844	-0.00416	53%	0.013257
-40	0.00751	0.004629	0.009605	53%	0.020767
-39	0.002902	0.010149	-0.00237	53%	0.023669
-38	-0.00075	0.003103	-0.00355	32%	0.022918
-37	0.002068	-0.0066	0.008374	53%	0.024986
-36	-0.00096	0.010128	-0.00903	37%	0.024022
-35	-0.00588	-0.01377	-0.00014	53%	0.018144
-34	0.009301	-0.00293	0.018197	68%	0.027445
-33	0.003559	0.007658	0.000578	47%	0.031005
-32	0.001174	0.007512	-0.00344	53%	0.032179
-31	-0.0072	0.003715	-0.01514	26%	0.024976
-30	-0.01159	-0.01243	-0.01098	26%	0.013384
-29	0.003629	0.000422	0.005962	37%	0.017013
-28	0.001323	0.007833	-0.00341	32%	0.018336
-27	-0.00389	-0.00382	-0.00394	32%	0.014448
-26	0.01606	0.024826	0.009684	63%	0.030507
-25	0.008637	0.020024	0.000356	68%	0.039144
-24	0.010488	0.005508	0.01411	58%	0.049633
-23	0.004026	0.000603	0.006515	37%	0.053659
-22	0.011842	0.023391	0.003442	58%	0.0655
-21	-0.01266	-0.01161	-0.01342	37%	0.052842
-20	-0.0027	-0.01023	0.002774	42%	0.05014

-19	-0.01251	-0.02115	-0.00622	37%	0.037631
-18	0.001373	0.015189	-0.00867	37%	0.039004
-17	-0.0098	-0.00914	-0.01029	21%	0.0292
-16	-0.00504	-0.01036	-0.00117	37%	0.024161
-15	0.002892	0.001365	0.004002	58%	0.027052
-14	-0.00516	-0.00523	-0.00511	26%	0.021894
-13	-0.00302	-0.00934	0.001583	47%	0.018876
-12	0.003063	0.005887	0.001009	74%	0.021938
-11	-0.00242	-0.00596	0.00016	37%	0.019522
-10	-0.00043	0.004167	-0.00378	47%	0.01909
-9	0.008844	0.007185	0.010051	58%	0.027934
-8	0.009322	0.01818	0.00288	53%	0.037256
-7	0.004995	0.014612	-0.002	47%	0.042251
-6	0.003257	0.00718	0.000403	53%	0.045508
-5	0.00506	0.014544	-0.00184	47%	0.050568
-4	0.008014	0.001899	0.012461	53%	0.058582
-3	-0.00158	0.003606	-0.00535	42%	0.057003
-2	0.006541	0.020026	-0.00327	42%	0.063544
-1	0.000639	-0.00238	0.002834	42%	0.064183
0	0.002138	0.001066	0.002918	47%	0.066322
1	0.017985	0.025396	0.012596	58%	0.084307
2	0.037591	0.034175	0.040074	79%	0.121897
3	-0.00594	-0.0168	0.001965	37%	0.115961
4	-0.00652	-0.0081	-0.00536	32%	0.109446
5	-0.00174	0.00139	-0.00402	37%	0.107703
6	-0.00585	0.000798	-0.01068	37%	0.101857
7	-0.00054	-0.01231	0.008011	32%	0.101313
8	-0.01696	-0.00979	-0.02217	16%	0.084357
9	-0.01151	-0.01088	-0.01196	37%	0.07285
10	-0.01031	-0.02015	-0.00315	42%	0.062541
Average from day -60 to -6	0.000827573	0.002297655	-0.000241691	-	0.020826927
Average from day -60 to -5	0.000903152	0.002516339	-0.000270232	-	0.021358018
Average from day -60 to -1	0.001069842	0.002734433	-0.000140967	-	0.02398935
Average from day -60 to +1	0.001359895	0.003073032	0.000113806	-	0.025645
Average from day -60 to +10	0.000880768	0.002096634	-3.29577E-06	-	0.034759366

Graph 7.2: The % of firms with positive AR relative to the announcement day in China from 2006 to 2010

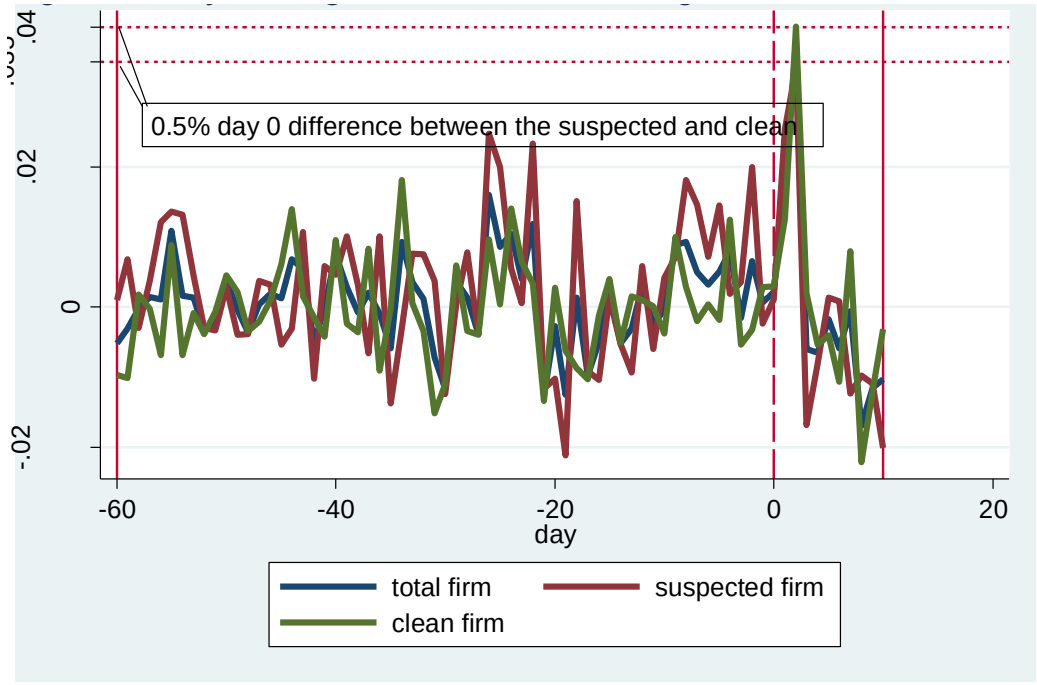


According to Graph 7.2, there are more firms getting negative AR than those getting positive. The highest percentage appears on +2 day, the second day after the announcement day. On that day, 80% of the total firms have positive AR. On day 0, less than 50% of the M&A firms are getting positive AR and the evidence might suggests inefficiency in the stock market as the stock prices delay in responding to the M&A event.

Table 7.3: The codes of the clean and suspected target firms after the dummy variable approach in China from 2006 to 2010

2006-2010				
The code of the clean firms			The code of the suspected firms	
CNT0601	CNT0802	CNT0901	CNT0602	CNT0706
CNT0701	CNT0803	CNT0902	CNT0702	CNT0804
CNT0705	CNT0807	CNT0903	CNT0703	CNT0805
CNT0801	CNT0808		CNT0704	CNT0806

Figure 7.1: Daily average return for China target firms from 2006 to 2010 from the Market model



According to Figure 7.1, the ARs of both the clean and the suspected firms have spikes before the merger announcement. It is also noticeable that comparing to the cases of U.K and U.S, Chinese firms are getting smaller AR but they do in the days after the merger announcement. The delay in reacting to mergers suggests (i) there is no need for insider trading, just the insiders should be ready to buy on day 0 and (ii) there are profits to be made by looking out for merger announcements and buying immediately. Moreover, on day 0, neither the clean nor the suspected gets substantial AR. Further studies need to be done to support the dummy variable approach.

Figure 7.2 shows the AR for China target firms from 2006 to 2010 based on Table 7.4 from the market adjusted model. Although Table 7.2 is slightly different from Table 7.4, when plotting the data, they are identical. Therefore, the discussion of Figure 7.2 is omitted.

Figure 7.2: Daily average return for China target firms from 2006 to 2010 from the Market-adjusted model

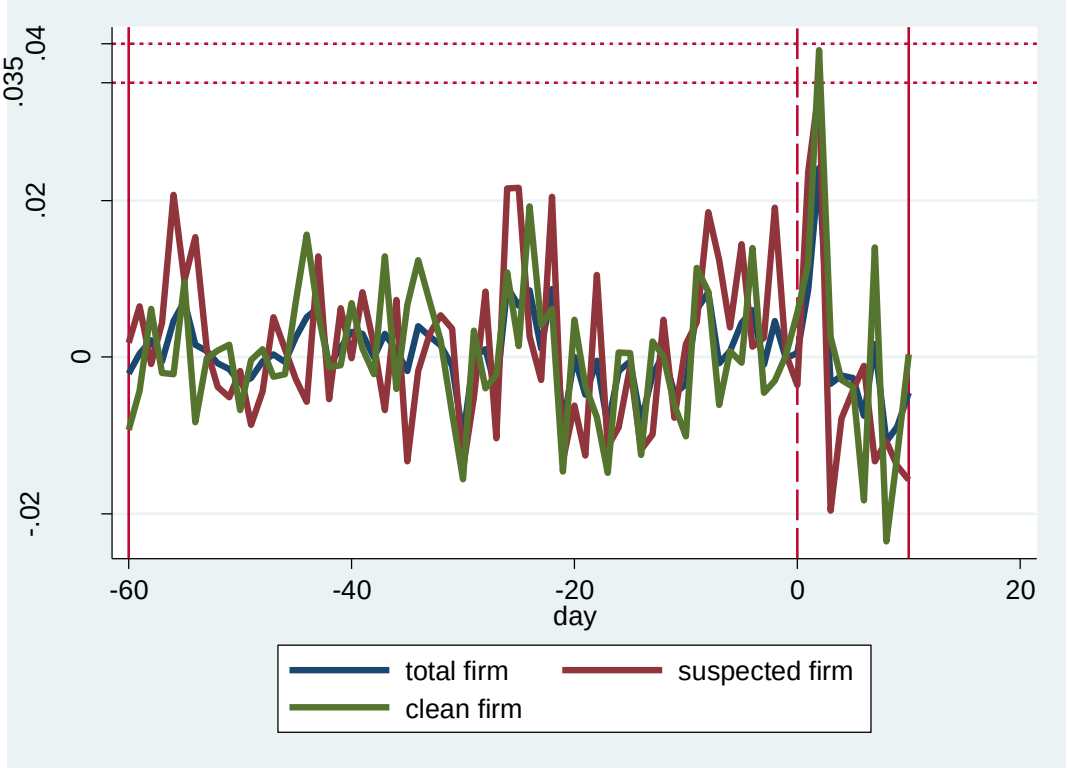
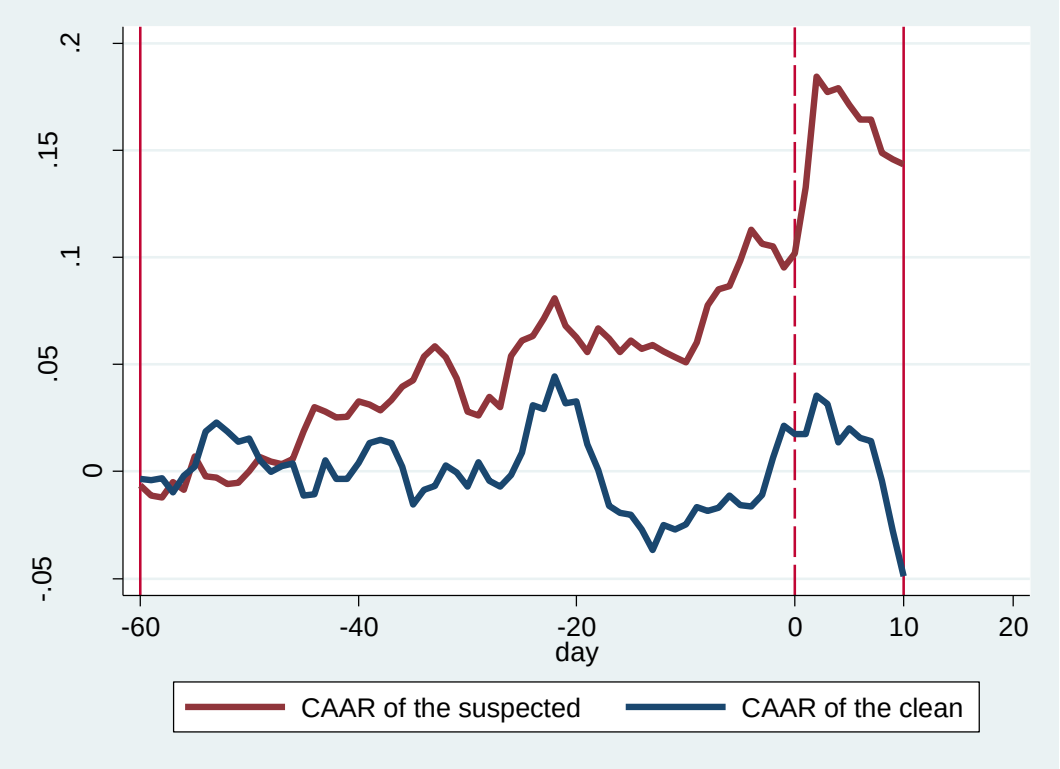


Figure 7.3 gives the CAAR of both the suspected and clean firms in China from 2006 to 2010 after the dummy variable approach.

Figure 7.3: The CAAR of the suspected and clean China target firms from 2006 to 2010

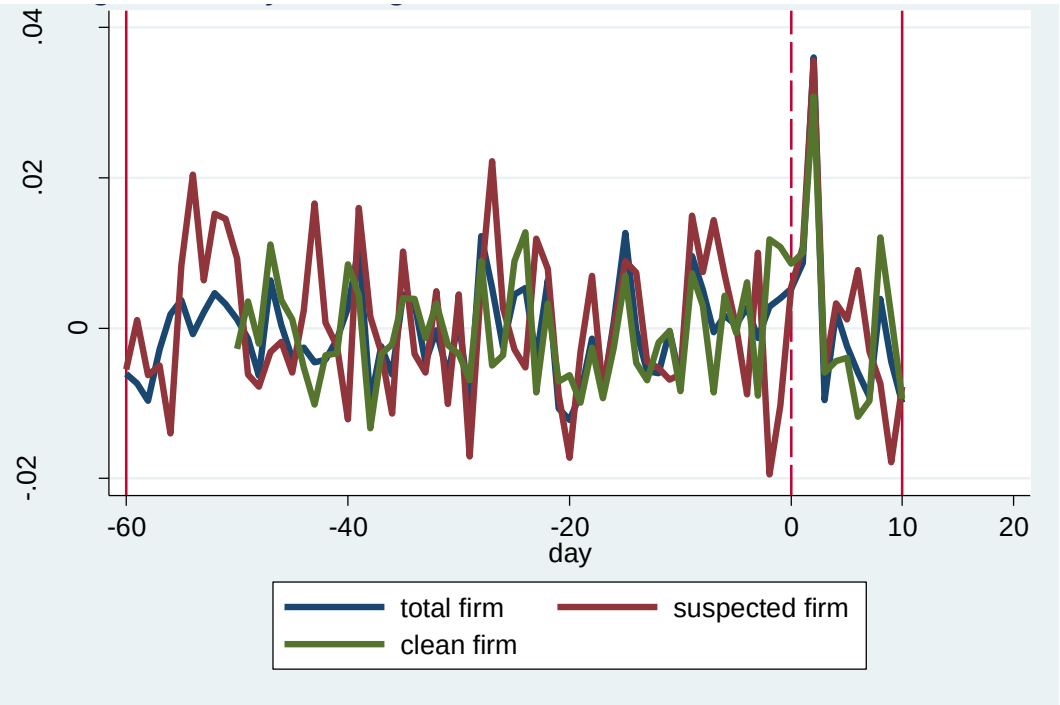


According to Figure 7.3, the CAAR of the clean firms is experiencing ups and dips before day -18. From -18 onwards, an increasing trend is observed. For the suspected firms, the buildup in the CAAR starts from the beginning of the event window, with occasional dips in between. In addition, only noticeable day 0 return is for the suspected firms.

Section 7.3.3Results of the first filter-the dummy variable approach for the bidders

Table 7.6 in the appendix is the result of the AR and CAAR for the bidder firms in China from 2006 to 2010. Figure 4 gives the AR for the China bidders from 2006 to 2010 from the market model based on Table 7.6. This thesis focuses mainly on the targets and therefore, for the bidders, only the first filter is applied.

Figure 7.4: Daily average return for China bidder firms from 2006 to 2010 from the Market model

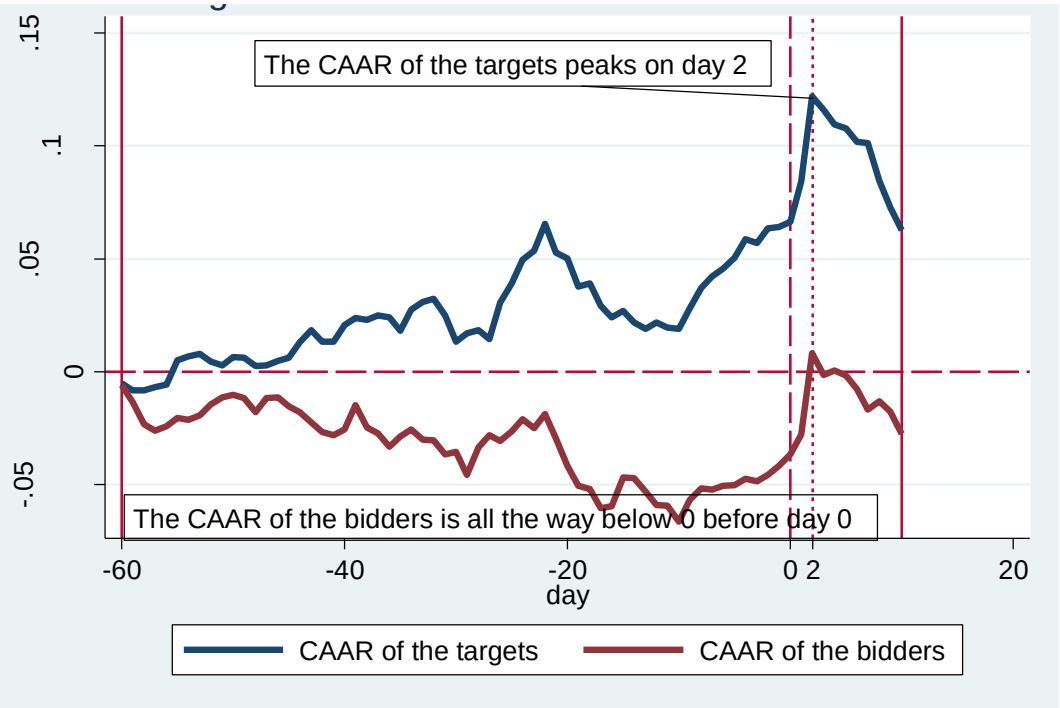


According to Figure 7.1, Figure 7.2 and Figure 7.4, the ARs of the China targets and bidders seem more noisy than those of the U.K and U.S. However, comparing to the evidences of the U.K and U.S, the daily average returns are much lower in China. For the China targets, the highest daily average returns of both the suspected firms and the clean firms appear on day 0. The clean target firms get about 4% abnormal returns on day +1 and the suspected target firms get an abnormal return which is slightly lower at around 3%. This again gives evidence that the stock market might be inefficient as the stock prices delay in responding the merger event. In the cases of U.K and U.S, the lowest abnormal return of the clean target firms on the announcement day is found in U.K 2009 at about 2.5%. In other years, the clean target firms can get more than 10% on the announcement day. For the suspected firms, the lowest abnormal return on day 0 is found in U.K 2006 at about 2.5%. The reason why the abnormal returns of the China targets and bidders are much more noisy than those in U.K and U.S might be attributed to the data used in running the regression. In Chapter 5 and 6, the regressions were done year by year while in this chapter, due to the data limitation, the data from 2006 to 2010 was combined to run a single regression. The reason of the ARs being noisy might be that the Chinese stock market is smaller and less mature with fewer participants who are perhaps lacking in expertise and information.

Table 7.7 in the appendix give the results of the AR and CAAR of China bidder firms from 2006 to 2010 based on the market adjusted model. Although Table 7.7 seems different from the Table 7.6, the graphs from the market-adjusted model are identical with those from the market model. As a result, the discussion is omitted for the results from the market-adjusted model.

Section 7.3.4The CAAR analysis after the first filter for both the targets and bidders

Section 7.3.4 is the CAAR analysis of the Chinese M&A firms after the first filter-the dummy variable approach for both the targets and bidders. Figure 7.5 gives the CAAR of China targets and bidders from 2006 to 2010.



According to Figure 7.5, CAAR of the targets has a positive slope while the CAAR of the bidder has a negative slope before -10 day. From -60 day onwards, the CAAR of the targets increases gradually and from -10 day onwards, it starts to increase rapidly and peaks at 12% on day 0 and afterwards, it begins to decrease. Starting from 0% on -60 day, the CAAR of the bidders decreases gradually for a 50 day period. It bottoms at about -7% on -10 day. From -10 day onwards, it starts to increase and peaks at 0% on the announcement day and afterwards, it begins to decrease. It is noticeable that there seems a delayed response of the market to respond to the merger announcement

because both the CAARs of the targets and bidders peak on day +2. This might be attributed to two possible reasons: (i) The Chinese stock market is not efficient; and (ii) this is simply the characteristic of a young market.

Section 7.3.5The results of the detection of the outliers

Tables 7.8 and 7.9 give the results of the detection of outliers. Based on the results from the first filter, each of the clean and suspected group is examined respectively whether they have positive squared abnormal returns equal or greater than 3.5 or 4 multiplied by the standard error.

Table 7.8: The day(s) on which the clean firms have outliers 3.5*SD or 4*SD in the China from 2006 to 2010

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**
CNT0601	-1 day	3.40***
CNT0701	-24 day	3.00***
CNT0705	None	-
CNT0801	None	-
CNT0802	-50 day	3.78***
	-45 day (3.5*SD)	2.93***
CNT0803	-4 day	3.44***
CNT0807	-55 day (3.5*SD)	2.44**
CNT0808	None	-
CNT0901	-33 day	1.06
	-43 day (3.5*SD)	0.91
CNT0902	-45 day	2.20**
CNT0903	-7 day	2.35**
	-26 day (3.5*SD)	1.99**

Table 7.9: The day(s) on which the suspected firms have positive outliers 3.5*SD or 4*SD in China from 2006 to 2010

The suspected target firms	**The day(s) on which the squared abnormal return is greater than 4*SD**	**t-statistics**
CNT0602	-23 day	4.37***
CNT0702	-28 day	3.09***
	-38 day	3.60***
CNT0703	-31 day (3.5*SD)	4.30***

	-18 day	4.98***
	-5 day	5.09***
CNT0704	-25 day	3.44***
CNT0706	-38 day	3.56***
	-2 day	3.81***
CNT0804	-26 day	4.13***
	-22 day (3.5*SD)	3.58***
	-8 day (3.5*SD)	3.66***
CNT0805	-47 day	5.80***
CNT0806	-3 day	2.40**

Section 7.3.6The categorization after two filters-the dummy variable approach, and the detection of the outliers

Table 7.10 gives the categorization of the clean, suspected and ultra-suspected firms after the dummy variable approach and the detection of outliers.

Table 7.10: The codes of the clean, suspected and ultra-suspected firms after two filters in China from 2006 to 2010

2006			
The code of the clean firms	The code of the suspected firms	The code of the ultra-suspected firms	
None	CN0601	CNT0602	
2007			
The code of the clean firms	The code of the suspected firms	The code of the ultra-suspected firms	
CNT0705	CNT0701	CNT0702	CNT0704
		CNT0703	
		CNT0706	
2008			
The code of the clean firms	The code of the suspected firms	The code of the ultra-suspected firms	
CNT0801	CNT0802	CNT0804	
CNT0808	CNT0807	CNT0806	
	CNT0803	CNT0805	
2009			
The code of the clean firms	The code of the suspected firms	The code of the ultra-suspected firms	
CNT0901	CNT0902	None	
	CNT0903		
Note: There were no firms from 2010			

Source: Author's summation

Section 7.3.7The Result of the Abnormal Turnover (AT) analysis

Table 7.11: The result of the AT analysis in China from 2006 to 2010

2006			
	The firms with no difference between two means (benchmark*1.25)	The firms with no difference between two means (benchmark*1.5)	The firms with no difference between two means (benchmark*2.0)
The average of the turnover from -61day to -11 day	None	None	CN0601
The average of the turnover from -10day to 0 day	None	None	None
2007			
The average of the turnover from -61day to -11 day	None	None	CN0705, CN0704, CN0701
The average of the turnover from -10day to 0 day	None	None	None
2008			
The average of the turnover from -61day to -11 day	None	None	CNT0803
The average of the turnover from -10day to 0 day	None	None	None
2009			
The average of the turnover from -61day to -11 day	None	None	None
The average of the turnover from -10day to 0 day	None	None	None
2010			
The average of the turnover from -61day to -11 day	None	None	None
The average of the turnover from -10day to 0 day	None	None	None

Source: Author's calculation

Similar to the results of the U.K and U.S, Table 7.11 shows that in a period from -61 to -10 day, abnormal high turnovers which are at least 200% higher than the benchmark trade volume of some firms are seen. This is a sign that most possible cases of insider trading take place one or two months prior to the merger announcement. In addition, this is suggestive that insider traders are those closely involved with the merger, or in other words, those who are able to get the information of a potential merger at a very early stage rather than those who acquire the information at a relatively late stage.

Table 7.12: Distribution of firms with respect to percentage of AT increase (Benchmark: AT for a period from -180 to -61 day before announcement)

% High of AT	No. & % of firms with higher AT from -61 to -11 day	No. & % of firms with higher AT from -10 to 0 day
2006		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	1 (50%)	0 (0%)
Total	1 (50%)	0 (0%)
2007		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	3 (50%)	0 (0%)
Total	3 (50%)	0 (0%)
2008		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	1 (17%)	0 (0%)
Total	1 (17%)	0 (0%)
2009		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	0 (0%)	0 (0%)
Total	0 (0%)	0 (0%)
2010		
125-150%	0 (0%)	0 (0%)
150-200%	0 (0%)	0 (0%)
>200%	0 (0%)	0 (0%)
Total	0 (0%)	0 (0%)

Source: Author's calculation

Section 7.3.8The categorization after the dummy variable, the detection of the outliers and the analysis of the Abnormal Turnover (AT)

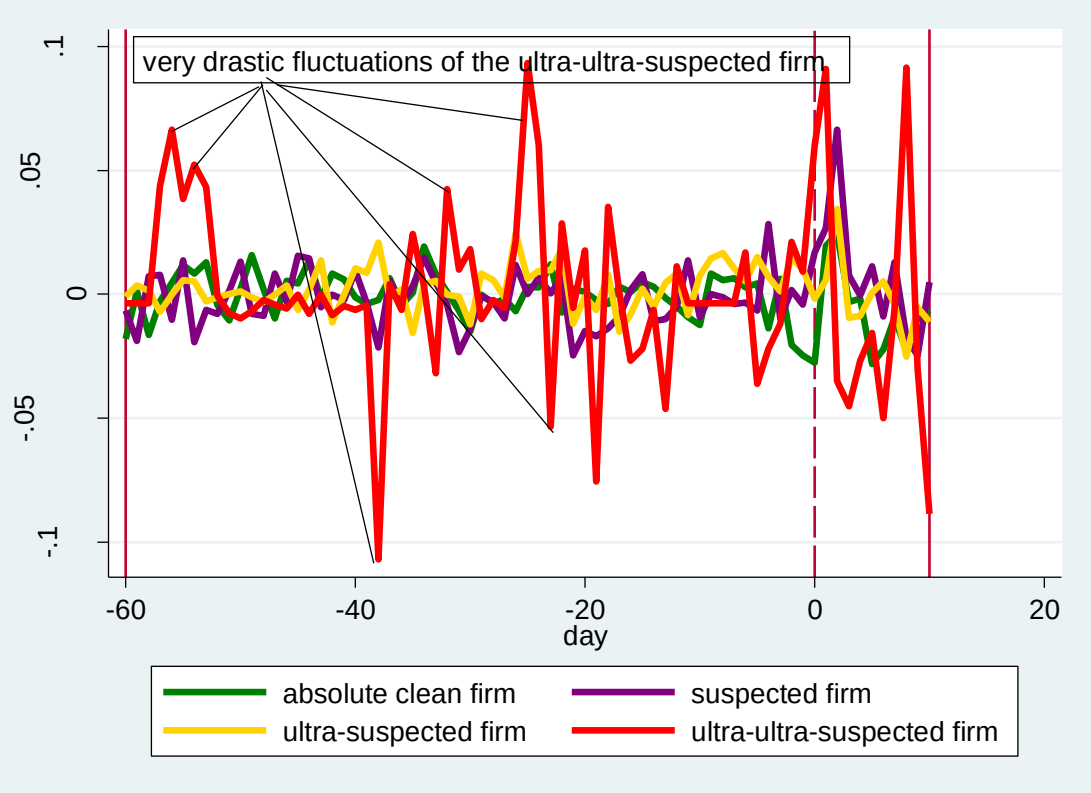
After applying three filters- the dummy variable approach, the detection of the outliers, and the analysis of the AT, the China firms are categorized into four groups- the clean, the suspected, the ultra-suspected and the ultra-ultra-suspected.

Table 7.13: The codes of the absolute clean, suspected, ultra-suspected and ultra-ultra-suspected firms after three filters in China from 2006 to 2010

2006				
The code of the absolute clean firms	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
None	None	CNT0601		None
		CNT0602		
2007				
The code of the absolute clean firms	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
None	CNT0705	CNT0701	CNT0706	CNT0704
		CNT0702		
		CNT0703		
2008				
The code of the absolute clean firms	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
CNT0801	CNT0802	CNT0803	CNT0805	None
CNT0808	CNT0807	CNT0804		
		CNT0806		
2009				
The code of the clean firms	The code of the suspected firms	The code of the ultra-suspected firms		The code of the ultra-ultra-suspected firms
CNT0901	CNT0902	None		None
	CNT0903			
Note: There were no firms from 2010				

Source: Author's summation

Figure 7.6: The AR of the four categories of firms in the China from 2006 to 2010



According to Figure 7.6, it is very noticeable that the AR of the ultra-ultra-suspected firms does not only have several significant positive spikes but also significant negative spikes before merger announcement. The highest spike appears on about -28 day which is slightly less than 10%. Comparing to the results of the U.K and the U.S, it seems that the Chinese ultra-ultra-suspected firms gain much less AR through insider trading. The AR of the clean firms is stable before day 0. However, on day 0, it is the AR of the ultra-ultra-suspected firms which reaches the highest figure-approximately 8% because of the delayed response of the stock market noted before.

Figure 7.7 presents the CAAR of the four categories-the absolute clean firm, the suspected firm, the ultra-suspected firm and the ultra-ultra-suspected firm in China from 2006 to 2010.

Figure 7.7: The CAAR of the four categories of firms in China from 2006 to 2010

According to Figure 7.7, the buildup in the CAAR of the ultra-suspected firm can be observed from the beginning of the event window. The increasing trend in the yellow curve is very pronounced. The CAAR of the ultra-ultra-suspected firms has several 'ups' and 'dips'. It increases sharply to 23% before -50 day and then begins to decrease. From -33 day onwards, it increases again and then decreases to less than 10%. From -5 day onwards, a sign of CAAR buildup is observed. The CAAR of the suspected firms decreases gradually through the event window. For the clean firms, the CAAR increases before -33 day and then starts to decrease afterwards. No increasing trend is observed for the CAAR of the clean firms before merger announcement.

Section 7.3.9The results of Granger causality test in the targets and the bidders

Table 7.14 shows the results of Granger causality test for the targets and bidders in pairs in China from 2006 to 2010. Table 7.19 in the appendix gives the results of the Augmented Dicky-Fuller (ADF) test for the targets and bidders in China from 2006 to 2010. The results show that all the targets and bidders are stationary.

Table 7.14: Granger causality test in the targets and bidders in China from 2006-2010

Target/Status	Bidder→ Target	F statistic	Target→ Bidder	F statistic
CNT0601/ultra-suspected	No	0.76	No	0.13
CNT0602/ultra-suspected	Yes (1%)	5.35	No	0.28
CNT0701/ultra-suspected	Yes (10%)	2.50	No	0.84
CNT0702/ultra-suspected	Yes (1%)	5.48	No	1.99
CNT0703/ultra-suspected	No	0.76	No	2.19
CNT0704/ultra-ultra-suspected	No	0.71	No	0.19
CNT0705/suspected	No	0.13	No	1.27
CNT0706/ultra-suspected	No	0.18	Yes (10%)	3.00
CNT0801/absolute clean	No	0.03	Yes (5%)	4.18
CNT0802/suspected	No	0.88	Yes (5%)	3.77
CNT0803/ultra-suspected	No	0.78	No	0.82
CNT0804/ultra-suspected	No	1.49	Yes (10%)	2.49
CNT0805/ultra-suspected	No	1.11	No	1.77
CNT0806/ultra-suspected	Yes (1%)	49.46	No	1.11
CNT0807/suspected	No	1.32	No	0.25
CNT0808/absolute clean	No	0.01	No	1.41
CNT0901/absolute clean	No	1.73	Yes (1%)	125.77
CNT0902/suspected	No	1.03	No	0.59
CNT0903/suspected	No	2.07	No	0.80

According to the results of Granger causality test, there is evidence that the targets Granger cause the bidders, and the bidders Granger cause the targets and mutual causality. For the bidders Granger cause the targets, all for cases lie in the ultra-ultra-suspected firms, and for the targets Granger cause the bidders, among the total five cases, two are absolute clean firms, two are ultra-suspected firms and one is suspected. This linkage is either suggestive of leaked news or that insider trading involves simultaneous trading with both buyer and target stock.

Section 7.3.10The results of the application of the day 0 hypothesis

In this chapter, the day 0 hypothesis is applied using China data. It is calculated after each of the three filters. With the China data, it is noticeable that on day 0, the clean firms are experiencing negative AR. This needs to be further looked at.

Table 7.15: The results of the day 0 hypothesis after the first filter[34]

Year	The clean firms	The suspected firms
2006	-0.0302059	0.0351706
2007	0.0384399	0.0038034
2008	-0.0184925	-0.0139526
2009	0.0259629	-
2010	-	-
Average	0.003926	0.00834

Source: Author's calculation

Table 7.16: The results of the day 0 hypothesis after two filters[35]

Year	The clean firms	The suspected firms	The ultra-suspected firms
2006	-	-0.0302059	0.0351706
2007	0.054705	0.0221747	0.0038034
2008	-0.0408366	-0.0035964	-0.0139526
2009	-0.0014645	0.0396766	-
2010	-	-	-
Average	0.004135	0.007012	0.00834

Source: Author's calculation

Table 7.17: The results of the day 0 hypothesis after three filters[36]

Year	The absolute clean firms	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	-	-	0.0024823	-
2007	-	0.054705	-0.0057004	0.0601897
2008	-0.0408366	-0.0247602	-0.0007817	-
2009	-0.0014645	0.0396766	-	-
2010	-	-	-	-
Average	-0.02115	0.023207	-0.00133	0.0601897

Source: Author's calculation

[34] The numbers in Table 7.14 are the average AR for both the suspected and the clean firms on day 0 from 2006 to 2010

[35] The numbers in Table 7.15 are the average AR for the suspected, the ultra-suspected and the clean firms on day 0 from 2006 to 2010

[36] The numbers in Table 7.16 are the average AR for the suspected, the ultra-suspected, the ultra-ultra-suspected and the clean firms on day 0 from 2006 to 2010

Table 7.18: The results of the sum AR of day 0, day +1 and day +2 after three filters[37]

Year	The absolute clean firms	The suspected firms	The ultra-suspected firms	The ultra-ultra-suspected firms
2006	-	-	-0.0039213	-
2007	-	0.0656421	0.0707875	0.1162262
2008	-0.0677913	0.0516188	0.0232319	-
2009	0.1847919	0.1253523	-	-
Average	0.0585003	0.0808707	0.0300327	0.1162262

Section 7.4 Conclusion

The intention of this chapter is to utilize the four filters developed in this thesis to detect the possible existence of insider trading prior to the merger announcement with China data. However, due to some confidential or political reasons, the news of the public rumours and the director's trading on the shares of China M&As cannot be found from the Nexis. Therefore, it is impossible to conduct the second filter-the news search with China data. As a result, this chapter only utilizes three filters to investigate the existence of possible insider trading. The database is the China domestic takeovers whose announcement dates have been during 2006-2010. The methodology used is the same with that in chapter 5 and 6. The AR and CAAR have been calculated and shown. The results show that firstly, the Chinese target firms tend to have lower AR than the U.K and U.S firms. Secondly, before the three filters, the pattern of the AR of the China target firms seems more noisy than that of the U.K and U.S, with more frequent ups and downs. After the three-filter approach, the AR of the ultra-ultra-suspected firms is found to have many spikes before merger announcement while that of the clean firms is much more stable. According to the CAAR, there is no sign of pre-merger buildup for the clean firms. The day 0 hypothesis does not work very well with China data. It is also very surprising that on day 0, the clean firms are getting negative AR. These different characteristics may reflect a young and immature market[38], with relatively few participants, where news of mergers, even when announced, is slow to filter out. Chinese stock market was defined as 'a new market

[37] Because of the delayed response in Chinese stock market, a summations of the AR of day 0, day +1 and day +2 are calculated. For example, for the clean firms in 2008, firstly, the sum of the three days ARs of the clean firms in 2008 are calculated and then the average.

[38] Literature of Chinese stock market is in Chapter 2 Section 2.3.2.

in the shunt period' by the management of Chinese stock market in 2001 and in recent years, the China Securities Regulatory Commission bases the policy making, the policy implementation and the policy revolution on the characteristic of this period[39]. Equally, it may reflect differences in the culture of the Chinese stock market. If the former, these differences will be expected to disappear perhaps over the next decade. If the latter, the differences may be more entrenched. In a sample of 19 target firms being investigated, 3 are considered to be absolute clean, 5 are suspected, 10 are ultra-suspected and 1 is considered ultra-ultra-suspected.

[39] China Finance Net (http://www.zgjrw.com/News/2012104/home/476662897600.shtml) and L ZHU (2012) ' The stock market maturity and its effects' (www.cnki.com.cn)

Appendix

In the appendix, firstly, the ARs and CAARs for both the targets and bidders in China from 2006 to 2010 from the market-adjusted model and from the modified market model are presented. Secondly, the names, the announcement dates and the industries of both the targets and bidders in China from 2006 to 2010 are presented. Thirdly, the names and the days on which the firms have abnormal returns in China from 2006 to 2010 are shown in tables. Then the results of the ADF test in the targets and bidders in China from 2006 to 2010 are shown.

Tables 7.4: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the target firms in China from 2006 to 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00212	0.001828	-0.00927	33%	-0.00212
-59	0.00044	0.006481	-0.00427	56%	-0.00168
-58	0.002172	-0.00091	0.006136	39%	0.000494
-57	-0.00056	0.004382	-0.00198	28%	-6.2E-05
-56	0.004589	0.020689	-0.00219	50%	0.004527
-55	0.007158	0.009783	0.009578	78%	0.011685
-54	0.001606	0.0153	-0.00835	50%	0.013291
-53	0.000772	0.000959	-0.00015	39%	0.014064
-52	-0.00076	-0.0038	0.000839	39%	0.013301
-51	-0.00156	-0.00511	0.001592	44%	0.011737
-50	-0.00333	-0.00177	-0.00676	33%	0.00841
-49	-0.00264	-0.00866	-0.00041	44%	0.005774
-48	-0.00055	-0.00437	0.000999	56%	0.005221
-47	0.000376	0.005085	-0.00252	33%	0.005597
-46	-0.00064	0.001011	-0.00214	50%	0.004952
-45	0.002533	-0.0028	0.007118	44%	0.007485
-44	0.005071	-0.00571	0.015639	44%	0.012556
-43	0.006306	0.012906	0.005535	50%	0.018863
-42	-0.00113	-0.00533	-0.00131	39%	0.017733
-41	0.001273	0.006243	-0.00103	44%	0.019006
-40	0.003206	-0.00012	0.006866	39%	0.022212
-39	0.002995	0.008283	0.001133	56%	0.025207
-38	-8.8E-05	0.001505	-0.00221	39%	0.025119
-37	0.002968	-0.00675	0.012839	28%	0.028087

-36	0.000867	0.007334	-0.0041	44%	0.028953
-35	-0.00176	-0.01334	0.006673	50%	0.027195
-34	0.003938	-0.0018	0.01237	61%	0.031133
-33	0.00265	0.002961	0.007102	39%	0.033783
-32	0.001523	0.005358	0.002149	56%	0.035306
-31	-0.00112	0.003648	-0.00717	28%	0.034185
-30	-0.01019	-0.01424	-0.01557	28%	0.023999
-29	0.000145	-0.00513	0.003386	33%	0.024144
-28	0.000974	0.008399	-0.00395	39%	0.025119
-27	-0.00436	-0.01035	-0.00228	22%	0.020762
-26	0.008986	0.02156	0.010813	44%	0.029748
-25	0.006578	0.021647	0.001438	61%	0.036326
-24	0.00855	0.002661	0.019259	44%	0.044876
-23	0.001127	-0.00288	0.004143	39%	0.046003
-22	0.008705	0.020446	0.006154	61%	0.054707
-21	-0.00895	-0.01326	-0.01459	28%	0.045757
-20	2.97E-07	-0.00619	0.004806	44%	0.045757
-19	-0.00483	-0.01257	-0.00362	56%	0.040928
-18	-0.00043	0.010538	-0.00768	33%	0.040501
-17	-0.00883	-0.01143	-0.01478	22%	0.031667
-16	-0.00179	-0.00897	0.000645	44%	0.02988
-15	-0.00057	-0.00119	0.000521	44%	0.029307
-14	-0.00826	-0.01179	-0.01249	22%	0.021043
-13	-0.00228	-0.00986	0.002027	33%	0.018762
-12	0.000376	0.004803	0.000118	61%	0.019138
-11	-0.00461	-0.00776	-0.0061	22%	0.014526
-10	-0.0035	0.001627	-0.0101	28%	0.011023
-9	0.006099	0.004466	0.011371	56%	0.017122
-8	0.008291	0.018493	0.008334	39%	0.025413
-7	-0.0008	0.012398	-0.00614	44%	0.024609
-6	0.0008	0.003789	0.000749	44%	0.025408
-5	0.004358	0.014454	-0.00067	44%	0.029767
-4	0.005977	0.001349	0.01395	44%	0.035744
-3	-0.00094	0.002457	-0.00455	44%	0.034803
-2	0.004623	0.019061	-0.00299	39%	0.039426
-1	-0.00013	0.000405	0.000234	39%	0.039299
0	0.000541	-0.00355	0.005657	50%	0.03984
1	0.008586	0.023657	0.011866	56%	0.048426
2	0.024195	0.03435	0.039195	72%	0.07262
3	-0.00338	-0.0196	0.002559	39%	0.069238
4	-0.00236	-0.00778	-0.00292	28%	0.066874
5	-0.00268	-0.00422	-0.0038	44%	0.064195
6	-0.0075	-0.00109	-0.0183	33%	0.056693
7	0.001694	-0.01331	0.013994	44%	0.058386
8	-0.0108	-0.01075	-0.02355	17%	0.047589
9	-0.00887	-0.01385	-0.01258	39%	0.038724
10	-0.00456	-0.01565	0.000399	39%	0.034163
Average from day -60	0.000462114	0.001245327	0.000348582	-	0.021973436

to -6					
Average from day -60 to -5	0.000531684	0.001481196	0.000330393	-	0.022112607
Average from day -60 to -1	0.000655072	0.001770317	0.0004191	-	0.0231263
Average from day -60 to +1	0.00078115	0.002037516	0.00068821	-	0.023803935
Average from day -60 to +10	0.000481272	0.001048254	0.000530507	-	0.027948254

Table 7.5: Daily average returns (AR) and cumulative average abnormal returns (CAR) for the target firms in the China from2006 to 2010(from the market model with significantR_{mt-1})

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms	Cumulative average abnormal returns (CAAR) of the suspected target firms	Cumulative average abnormal returns (CAAR) of the clean target firms
-60	-0.005	0.001	-0.010	37%	-0.005	0.001	-0.010
-59	-0.003	0.007	-0.010	37%	-0.008	0.008	-0.020
-58	0.000	-0.003	0.002	32%	-0.008	0.005	-0.018
-57	0.000	0.001	0.000	26%	-0.008	0.006	-0.018
-56	0.001	0.013	-0.007	58%	-0.007	0.019	-0.025
-55	0.010	0.013	0.009	53%	0.004	0.032	-0.016
-54	0.002	0.013	-0.007	47%	0.006	0.045	-0.023
-53	0.001	0.004	-0.001	47%	0.007	0.049	-0.024
-52	-0.003	-0.003	-0.004	37%	0.003	0.046	-0.028
-51	-0.002	-0.003	-0.001	53%	0.002	0.043	-0.029
-50	0.004	0.003	0.005	42%	0.006	0.047	-0.024
-49	-0.001	-0.004	0.002	47%	0.005	0.042	-0.022
-48	-0.004	-0.004	-0.003	42%	0.002	0.038	-0.025
-47	0.000	0.004	-0.002	32%	0.002	0.042	-0.027
-46	0.002	0.003	0.001	47%	0.004	0.045	-0.026
-45	0.001	-0.005	0.006	37%	0.005	0.040	-0.020
-44	0.007	-0.004	0.014	53%	0.012	0.036	-0.006
-43	0.006	0.011	0.002	42%	0.017	0.047	-0.005
-42	-0.005	-0.010	-0.001	21%	0.012	0.037	-0.006
-41	0.000	0.006	-0.004	53%	0.012	0.043	-0.010
-40	0.007	0.005	0.010	53%	0.020	0.047	-0.001

-39	0.003	0.010	-0.002	53%	0.022	0.057	-0.003
-38	-0.001	0.003	-0.004	32%	0.022	0.061	-0.007
-37	0.002	-0.007	0.008	53%	0.024	0.054	0.002
-36	-0.001	0.010	-0.009	37%	0.023	0.064	-0.007
-35	-0.006	-0.014	0.000	53%	0.017	0.050	-0.007
-34	0.009	-0.003	0.018	68%	0.026	0.047	0.011
-33	0.004	0.008	0.001	53%	0.030	0.055	0.011
-32	0.001	0.008	-0.003	53%	0.031	0.063	0.008
-31	-0.007	0.004	-0.015	26%	0.024	0.067	-0.007
-30	-0.012	-0.012	-0.011	26%	0.012	0.055	-0.018
-29	0.004	0.000	0.006	37%	0.016	0.055	-0.012
-28	0.002	0.008	-0.003	32%	0.018	0.063	-0.016
-27	-0.004	-0.004	-0.004	32%	0.014	0.060	-0.020
-26	0.016	0.025	0.010	63%	0.030	0.085	-0.010
-25	0.009	0.020	0.000	68%	0.039	0.105	-0.010
-24	0.010	0.005	0.014	58%	0.049	0.110	0.005
-23	0.004	0.001	0.007	37%	0.053	0.111	0.011
-22	0.012	0.023	0.003	58%	0.065	0.135	0.015
-21	-0.013	-0.012	-0.013	37%	0.053	0.123	0.001
-20	-0.003	-0.012	0.003	37%	0.049	0.112	0.004
-19	-0.012	-0.020	-0.006	37%	0.037	0.091	-0.002
-18	0.002	0.016	-0.009	37%	0.039	0.108	-0.011
-17	-0.010	-0.009	-0.010	21%	0.029	0.098	-0.021
-16	-0.005	-0.011	-0.001	37%	0.024	0.088	-0.023
-15	0.003	0.002	0.004	58%	0.027	0.089	-0.019
-14	-0.005	-0.006	-0.005	26%	0.022	0.084	-0.024
-13	-0.003	-0.009	0.002	47%	0.019	0.075	-0.022
-12	0.003	0.006	0.001	74%	0.022	0.081	-0.021
-11	-0.002	-0.006	0.000	37%	0.019	0.075	-0.021
-10	0.000	0.004	-0.004	47%	0.019	0.079	-0.025
-9	0.009	0.007	0.010	58%	0.028	0.086	-0.015
-8	0.009	0.018	0.003	53%	0.037	0.104	-0.012
-7	0.005	0.015	-0.002	47%	0.042	0.119	-0.014
-6	0.003	0.007	0.000	53%	0.045	0.126	-0.013
-5	0.005	0.015	-0.002	47%	0.051	0.141	-0.015
-4	0.008	0.002	0.012	53%	0.058	0.142	-0.003
-3	-0.002	0.004	-0.005	42%	0.057	0.146	-0.008
-2	0.006	0.019	-0.003	42%	0.063	0.165	-0.011
-1	0.001	-0.002	0.003	42%	0.064	0.163	-0.008
0	0.002	0.001	0.003	47%	0.066	0.165	-0.006
1	0.018	0.025	0.013	58%	0.084	0.190	0.007
2	0.038	0.034	0.040	79%	0.122	0.224	0.047
3	-0.006	-0.017	0.002	37%	0.116	0.207	0.049
4	-0.006	-0.008	-0.005	32%	0.109	0.200	0.044
5	-0.002	0.001	-0.004	37%	0.108	0.201	0.040
6	-0.006	0.001	-0.011	37%	0.102	0.202	0.029
7	0.000	-0.012	0.008	32%	0.101	0.190	0.037
8	-0.017	-0.009	-0.022	16%	0.085	0.181	0.015
9	-0.012	-0.013	-0.012	37%	0.072	0.168	0.003
10	-0.010	-0.020	-0.003	42%	0.062	0.148	0.000

Average from day -60 to -6	0.0008	0.002236364	-0.000181818	-	0.020163636	0.0646	-0.012272727
Average from day -60 to -5	0.000875	0.002464286	-0.000214286	-	0.020714286	0.065964286	-0.012321429
Average from day -60 to -1	0.001033333	0.002683333	-8.33333E-05	-	0.023366667	0.071833333	-0.012
Average from day -60 to +1	0.001322581	0.003016129	0.000177419	-	0.025032258	0.075241935	-0.011596774
Average from day -60 to +10	0.000859155	0.002028169	5.6338E-05	-	0.034211268	0.089943662	-0.006408451

Table 7.6: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in China from 2006 to 2010(from the market model)

Day	Daily average of the total bidder firms	Daily average of the suspected bidder firms	Daily average of the clean bidder firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.00609	-0.00551	-0.00559	37%	-0.00609
-59	-0.00739	0.001056	-0.00907	32%	-0.01348
-58	-0.00971	-0.00624	-0.00763	37%	-0.02319
-57	-0.00284	-0.00497	-0.0032	37%	-0.02603
-56	0.00182	-0.01398	0.011017	42%	-0.02421
-55	0.003681	0.008323	-0.00405	42%	-0.02053
-54	-0.00077	0.020429	-0.01493	42%	-0.0213
-53	0.002058	0.006336	-0.00102	47%	-0.01924
-52	0.004638	0.015204	0.0001	58%	-0.01461
-51	0.003206	0.014554	-0.0012	47%	-0.0114
-50	0.001116	0.009212	-0.0028	37%	-0.01028
-49	-0.00141	-0.00613	0.003573	37%	-0.01169
-48	-0.00634	-0.00779	-0.00205	42%	-0.01803
-47	0.00633	-0.00316	0.011151	53%	-0.0117
-46	0.00041	-0.00185	0.003724	47%	-0.01129

-45	-0.00402	-0.00593	0.001172	53%	-0.01532
-44	-0.00263	0.002337	-0.00523	32%	-0.01795
-43	-0.00459	0.016562	-0.01021	42%	-0.02254
-42	-0.00423	0.000741	-0.0036	37%	-0.02677
-41	-0.00146	-0.00246	-0.00338	26%	-0.02823
-40	0.00265	-0.01214	0.008479	58%	-0.02558
-39	0.010776	0.015997	0.004415	58%	-0.01481
-38	-0.00988	0.001505	-0.01333	42%	-0.02469
-37	-0.00245	-0.00318	-0.00347	47%	-0.02714
-36	-0.00615	-0.01139	-0.00219	37%	-0.03328
-35	0.004484	0.01017	0.003964	53%	-0.0288
-34	0.003323	-0.00347	0.00389	47%	-0.02548
-33	-0.00455	-0.0059	-0.0013	42%	-0.03003
-32	-0.0003	0.00493	0.003251	68%	-0.03033
-31	-0.00625	-0.01009	-0.00225	42%	-0.03659
-30	0.001088	0.004434	-0.00345	47%	-0.0355
-29	-0.01022	-0.01708	-0.0069	32%	-0.04572
-28	0.012205	0.006161	0.008948	53%	-0.03351
-27	0.005296	0.022169	-0.00495	42%	-0.02822
-26	-0.00254	0.002653	-0.00364	58%	-0.03076
-25	0.004451	-0.00282	0.008924	42%	-0.02631
-24	0.00537	-0.00525	0.012748	53%	-0.02094
-23	-0.00412	0.011924	-0.00853	47%	-0.02505
-22	0.006348	0.00792	0.003264	53%	-0.01871
-21	-0.0107	-0.00893	-0.00714	32%	-0.0294
-20	-0.01222	-0.01721	-0.00625	26%	-0.04162
-19	-0.0088	-0.00322	-0.00992	42%	-0.05043
-18	-0.00144	0.00691	-0.00263	53%	-0.05187
-17	-0.0085	-0.00829	-0.00936	16%	-0.06037
-16	0.000845	0.000231	-0.00262	32%	-0.05953
-15	0.012629	0.008935	0.006929	63%	-0.0469
-14	-0.00032	0.007368	-0.00466	37%	-0.04722
-13	-0.00573	-0.00448	-0.00694	32%	-0.05295
-12	-0.00597	-0.00529	-0.00189	37%	-0.05892
-11	-0.00037	-0.00685	-0.00042	37%	-0.05929
-10	-0.00699	-0.00621	-0.00843	47%	-0.06628
-9	0.009628	0.014956	0.007301	47%	-0.05665
-8	0.005084	0.00745	0.002984	58%	-0.05157
-7	-0.00056	0.014341	-0.00853	37%	-0.05213
-6	0.001663	0.007106	0.004341	37%	-0.05047
-5	0.000362	0.000187	-0.0006	53%	-0.05011
-4	0.002775	-0.00885	0.006125	53%	-0.04733
-3	-0.00131	0.009986	-0.009	32%	-0.04864
-2	0.002884	-0.01947	0.011844	47%	-0.04575
-1	0.003999	-0.01028	0.010795	53%	-0.04176
0	0.005205	0.005518	0.008601	74%	-0.03655
1	0.008622	0.010743	0.010008	42%	-0.02793
2	0.036013	0.035558	0.030771	68%	0.008085
3	-0.00961	-0.00582	-0.00589	32%	-0.00153
4	0.002201	0.003307	-0.00437	42%	0.000675

5	-0.00242	0.001161	-0.00397	42%	-0.00175
6	-0.00592	0.007731	-0.01182	37%	-0.00767
7	-0.00919	-0.00314	-0.00965	37%	-0.01686
8	0.003877	-0.0074	0.012047	42%	-0.01298
9	-0.00451	-0.01781	0.001554	58%	-0.01749
10	-0.00992	-0.00778	-0.00944	42%	-0.02742
Average from day -60 to -6	-0.000917109	0.001092618	-0.001501545	-	-0.031471455
Average from day -60 to -5	-0.000894268	0.001076446	-0.001485446	-	-0.031804286
Average from day -60 to -1	-0.000695517	0.000527783	-0.001057017	-	-0.032742
Average from day -60 to +1	-0.000450065	0.000773032	-0.000722774	-	-0.032725806
Average from day -60 to +10	-0.000385676	0.000756831	-0.000641972	-	-0.029661127

Tables 7.7: Daily average returns (AR) and cumulative average abnormal returns (CAAR) for the bidder firms in China from 2006 to 2010(from the market-adjusted model)

Day	Daily average of the total target firms	Daily average of the suspected target firms	Daily average of the clean target firms	Percent of daily residuals positive of the total target firms	Cumulative average abnormal returns (CAAR) of the total target firms
-60	-0.0024	-0.00469	-0.00095	39%	-0.0024
-59	-0.00355	0.001368	-0.00668	28%	-0.00595
-58	-0.00582	-0.00737	-0.00483	28%	-0.01178
-57	-0.00174	-0.00403	-0.00028	44%	-0.01351
-56	0.005453	-0.01411	0.017902	50%	-0.00806
-55	0.00107	0.010446	-0.0049	44%	-0.00699
-54	-0.0009	0.016833	-0.01218	44%	-0.00789
-53	0.001449	0.007304	-0.00228	33%	-0.00644
-52	0.005858	0.015008	3.58E-05	56%	-0.00058
-51	0.0058	0.012253	0.001693	61%	0.00522
-50	-0.0007	0.010108	-0.00758	44%	0.00452
-49	-0.00269	-0.00521	-0.00108	33%	0.001833
-48	-0.00109	-0.00833	0.003512	44%	0.00074
-47	0.0079	-0.00279	0.014702	56%	0.00864
-46	0.002036	0.00205	0.002026	44%	0.010676

-45	0.003761	-0.00378	0.008563	44%	0.014437
-44	-0.00273	-0.00043	-0.0042	33%	0.011704
-43	0.002371	0.016945	-0.0069	33%	0.014075
-42	0.004394	0.004608	0.004258	39%	0.01847
-41	-0.0012	-0.00396	0.000565	33%	0.017273
-40	-0.00149	-0.01324	0.005986	44%	0.015781
-39	0.008957	0.01667	0.004049	44%	0.024738
-38	-0.0071	0.002661	-0.01331	44%	0.017638
-37	0.00122	-0.00234	0.003486	50%	0.018857
-36	-0.00569	-0.00967	-0.00316	39%	0.013166
-35	0.006229	0.011582	0.002822	39%	0.019395
-34	0.00245	-0.00575	0.007667	56%	0.021845
-33	-0.00499	-0.00821	-0.00294	44%	0.016853
-32	0.005228	-0.00124	0.009343	61%	0.022081
-31	0.001171	-0.00698	0.006359	44%	0.023252
-30	-0.00262	0.001724	-0.00538	44%	0.020637
-29	-0.01622	-0.01958	-0.01408	17%	0.004418
-28	0.008863	0.010163	0.008036	44%	0.013281
-27	0.003143	0.023091	-0.00955	39%	0.016423
-26	-0.00055	0.007281	-0.00554	44%	0.015872
-25	0.007777	-0.00481	0.01579	44%	0.02365
-24	0.007394	-0.0039	0.01458	50%	0.031043
-23	-0.00374	0.007253	-0.01074	39%	0.027303
-22	0.008121	0.004227	0.010598	50%	0.035424
-21	-0.00831	-0.00896	-0.0079	33%	0.027112
-20	-0.00764	-0.01354	-0.00389	33%	0.019471
-19	-0.00148	0.002686	-0.00413	61%	0.017994
-18	0.002655	0.005091	0.001105	50%	0.02065
-17	-0.00834	-0.00247	-0.01207	28%	0.01231
-16	-1.3E-05	0.002078	-0.00134	28%	0.012297
-15	0.003204	0.007813	0.000271	50%	0.015501
-14	-0.00815	0.008052	-0.01845	33%	0.007354
-13	-0.00551	-0.00446	-0.00618	22%	0.001841
-12	-0.00221	-0.0049	-0.0005	44%	-0.00037
-11	-0.004	-0.00532	-0.00316	33%	-0.00437
-10	-0.00914	-0.00261	-0.0133	22%	-0.01351
-9	0.00951	0.015825	0.005492	39%	-0.004
-8	0.007588	0.007348	0.007741	44%	0.003586
-7	-0.00522	0.009914	-0.01484	33%	-0.00163
-6	0.007802	0.01149	0.005454	39%	0.006173
-5	0.002746	-5.9E-05	0.004531	50%	0.008919
-4	0.000384	-0.00977	0.006844	44%	0.009303
-3	-0.00363	0.006264	-0.00993	33%	0.005672
-2	0.001212	-0.01432	0.011094	44%	0.006884
-1	0.004796	-0.0059	0.011605	44%	0.01168
0	0.002899	0.00273	0.003006	56%	0.014579
1	0.010132	0.011493	0.009266	50%	0.02471
2	0.031319	0.033347	0.030028	72%	0.056029
3	-0.00749	-0.00392	-0.00976	39%	0.048537
4	0.000194	0.003108	-0.00166	39%	0.048731

5	-0.0059	-0.00252	-0.00806	39%	0.042828
6	-0.00578	-0.00158	-0.00845	33%	0.037048
7	-0.00755	-0.00328	-0.01026	28%	0.029502
8	0.002758	-0.01342	0.013051	44%	0.032259
9	-0.00567	-0.01963	0.00321	61%	0.026589
10	-0.00622	-0.00653	-0.00602	39%	0.020368
Average from day -60 to -6	0.000112	0.00144	-0.00073	-	0.009928
Average from day -60 to -5	0.000159	0.001413	-0.00064	-	0.00991
Average from day -60 to -1	0.000195	0.000923	-0.00027	-	0.009809
Average from day -60 to +1	0.000399	0.001123	-6.2E-05	-	0.010126
Average from day -60 to +10	0.000287	0.000778	-2.5E-05	-	0.013658

Table 7.17: The names and announcement dates for both the target and acquiring firms in China from 2006 to 2010

Target	**Bidder**	**Announcement date**	**Industry**
CNT0601	CNB0601	2006	Energy and Power
CNT0602	CNB0602	2006	Energy and Power
CNT0701	CNB0701	2007	Industrials
CNT0702	CNB0702	2007	Industrials
CNT0703	CNB0703	2007	Materials
CNT0704	CNB0704	2007	Industrials
CNT0705	CNB0705	2007	Consumer Staples
CNT0706	CNB0706	2007	Materials
CNT0801	CNB0801	2008	Materials
CNT0802	CNB0802	2008	High Technology
CNT0803	CNB0803	2008	Consumer Staples
CNT0804	CNB0804	2008	Healthcare
CNT0805	CNB0805	2008	Materials
CNT0806	CNB0806	2008	Materials
CNT0807	CNB0807	2008	Materials
CNT0808	CNB0808	2008	Materials
CNT0901	CNB0901	2009	Healthcare
CNT0902	CNB0902	2009	Industrials
CNT0903	CNB0903	2009	Financials

Table 7.18: The firms' names and the days on which the firms have abnormal returns in China from 2006 to 2010

Target	**Note for the target**	**coefficient**	**t-statistics**	**Bidder**	**Note for the bidder**	**coefficient**	**t-statistics**
CNT0601	Nothing	-	-	CNB0601	Nothing	-	-
CNT0602	-23 day	0.05589	4.43	CNB0602	-16 day	0.06048	4.26
	-22 day	0.03302	2.61				
	-21 day	-0.02641	-2.09				
CNT0701	Nothing	-	-	CNB0701	Nothing	-	-
CNT0702	-46 day	-0.0508	-2.17	CNB0702	-47 day	-0.1127	-3.38
	-29 day	0.04503	2.00		-46 day	-0.07486	-2.23
	-28 day	0.06732	2.99				
	-26 day	0.05203	2.30				
CNT0703	-31 day	0.08894	3.71	CNB0703	-54 day	0.11667	4.42
	-8 day	0.06527	2.87				
	-6 day	0.05213	2.31				
	-5 day	0.10708	4.74				
CNT0704	-56 day	0.09975	3.43	CNT0704	Nothing		
	-38 day	-0.10704	-3.98				
CNT0705	Nothing	-	-	CNB0705	-51 day	0.10222	3.85
					-9 day	0.06286	2.34
CNT0801	Nothing	-	-	CNB0801	Nothing	-	-
CNT0802	Nothing	-	-	CNB0802	Nothing	-	-
CNT0803	Nothing	-	-	CNB0803	Nothing	-	-

CNT0804	-26 day	0.12980	3.87	CNB0804	-23 day	0.06196	2.24
	-25 day	0.06688	2.00				
	-22 day	0.11200	3.27				
CNT0805	-47 day	0.09464	5.83	CNB0805	-34 day	-0.0515	-2.32
	-46 day	0.05620	3.47				
	-21 day	-0.03748	-2.10				
CNT0806	-17 day	-0.04816	-2.13	CNB0806	Nothing	-	-
CNT0807	Nothing	-	-	CNB0807	Nothing	-	-
CNT0808	Nothing	-	-	CNB0808	Nothing	-	-
CNT0901	Nothing	-	-	CNB0901	Nothing	-	-
CNT0902	Nothing	-	-	CNB0902	Nothing	-	-
CNT0903	Nothing	-	-	CNB0903	Nothing	-	-

Table 7.19: Augmented Dicky-Fuller test in the targets and bidders in China from 2006 to 2010

Target/Status	P-value of ADF test	Bidder/Status	P-value of ADF test
CNT0601/stationary	0.00	CNB0601/stationary	0.00
CNT0602/stationary	0.00	CNB0602/stationary	0.00
CNT0701/stationary	0.00	CNB0701/stationary	0.00
CNT0702/stationary	0.00	CNB0702/stationary	0.00
CNT0703/stationary	0.00	CNB0703/stationary	0.00
CNT0704/stationary	0.00	CNB0704/stationary	0.00
CNT0705/stationary	0.00	CNB0705/stationary	0.00
CNT0706/stationary	0.00	CNB0706/stationary	0.00
CNT0801/stationary	0.00	CNB0801/stationary	0.00
CNT0802/stationary	0.00	CNB0802/stationary	0.00
CNT0803/stationary	0.00	CNB0803/stationary	0.00
CNT0804/stationary	0.00	CNB0804/stationary	0.00
CNT0805/stationary	0.00	CNB0805/stationary	0.00
CNT0806/stationary	0.00	CNB0806/stationary	0.00

CNT0807/stationary	0.00	CNB0807/stationary	0.00
CNT0808/stationary	0.00	CNB0808/stationary	0.00
CNT0901/stationary	0.00	CNB0901/stationary	0.00
CNT0902/stationary	0.00	CNB0902/stationary	0.00
CNT0903/stationary	0.00	CNB0903/stationary	0.00

Chapter 8 Conclusion

Being acquired is one of the biggest events in the life of a company. In recent years, M&A activities around the world have increased dramatically and not surprisingly, it has become one of the most researched topics in finance[40]. Many scholars have found that the value of the target stock goes up substantially (e.g. a recent work done by Agrawal and Nasser (2012)). This sharp and almost instantaneous increase in stock price provides a tempting trading opportunity to corporate insiders who often have knowledge of takeover negotiations months in advance of its public announcement. Anecdotal evidence suggests that a great deal of insider trading takes place before the merger announcements (see Morgenson, 2006). Consequently, takeovers have been a major focus of regulatory efforts against insider trading.

This thesis focuses on developing a feasible methodology for the regulations to investigate the possible existence of insider trading. The study is based on three countries which can represent three different economic regions-the U.K, the U.S and China. The three target countries have different laws in regulating insider trading and this study also compares the impacts of the regulation laws in the three countries. In addition China's is a very young market.

Section 8.1 Summary and Discussion

This thesis has reviewed the literature and developed a four filter methodology to help detect insider trading. The first filter is based on Fama Finsher, Jensen and Roll's work in 1969. They have conducted an event study and examined the effect of the announcement of a stock split on stock prices. In their study, they calculate the Average Abnormal Return (AR) and the Cumulative Average Abnormal Return (CAAR) and assume that if there are no unusual price movements prior to the announcement date, one would expect both the AR and CAAR to fluctuate randomly about zero. However, if there is leakage of, and trading on, inside information just prior to the announcement date, this should show up in the form of positive daily

[40] Jensen and Ruback (1983), Jarrel et al. (1988), Andrade et al. (2001), Holmstrom and Kaplan (2001), and Betton et al. (2008) provide excellent reviews of this literature.

average residuals as t approaches 0 and a corresponding build up in CAAR. However, this commonly applied method can only give a general idea of the possible insider trading. As a result, I followed the study of Binder (1998) to include daily dummy variables in the regression and formed my first filter of detecting insider trading. Through this filter, I categorize the sample firms into two rough groups-the clean and the suspected. In this study, the data shows that the bidders do not tend to get a day 0 AR and hence there is less reason for insiders to try to expropriate gains before day 0. Also the laws of both the U.K and U.S require directors to register dealings in own company and in the U.K. directors even need to report the transactions on behalf of their spouse and children (Hillier and Marchall/2002). The above can be a deterrent to insider trading.

The possible link between insider trading and the publication of inside information has been recognized in Hirshleifer (1971) and Fama and Laffer (1971). They found that those who possess privileged information have an incentive to take market positions on the basis of their information and then announce their information publicly. This issue is challenging to investigate empirically because isolating trading based on private information is difficult (Agarwal and Singh, 2006). The above is the inspiration of my second filter-the news search. Because of the difficulty of knowing whether the public released news is truly 'public released news' or is just the insider's strategy to cover up their insider trading activity, I consider two situations - firstly, the public news released before the problematic day and secondly, the public news released after the problematic day where the problematic day has been identified as some form of abnormal return from the previous filters. For the former situation, I name the firms as the 'obscure firm' and for the latter, I name them as the 'obscure firm with lagged news'. Through this filter, I re-categorize the sample firms into four groups-the clean, the obscure, the obscure with lagged news and the suspected.

The first filter helps in the detection of insider trading when the trading is done not just on one day, but on a number of adjacent days. But it may miss a single spike, if on either side of it there are oppositely signed disturbances. This is why we use the third filter in the series. The investigation of outliers is used as this third filter in this thesis. The positive residuals which are 3.5 or 4 times greater than the standard deviation are considered as the outliers. And through this filter, the sample firms are

categorized as the clean, the obscure, the obscure with lagged news, the suspected and the ultra-suspected. It is possible that an upward sloping CAAR could be the result of steady small and continuous daily increases, which our methodology would not pick up. But in reality the CAAR of the firms classified as clean tend to be flat. In any case it is questionable if insider traders would act in a continuous and steady manner, just as with any criminal activity they will not wish to linger at the scene of their crime.
Keown and Pinkerton (1981), Jarrell and Poulsen (1989), Sanders and Zdanowicz (1992) indirectly examine the prevalence of illegal insider trading by examining abnormal returns and the abnormal turnovers (AT) prior to takeover announcement for the stocks. A recent work done by King (2009) confirms the importance of AT for triggering an insider trading investigation. Based on the methodology used by Agarwal and Singh (2006), I developed my fourth filter of detecting insider trading-the analysis of the AT. Consequently, all the sample firms are categorized as the absolute clean, the obscure, the obscure with lagged news, the suspected, the ultra-suspected and the ultra-ultra-suspected.

Apart from the four filters, a day 0 abnormal return hypothesis is proposed and tested at the end of the analysis to verify the results from the four filters. The day 0 hypothesis is an original contribution of this thesis and the hypothesis is that on day 0, there will be a substantial abnormal return for the targets due to the substantial trade volume in the stock market, however, with the existence of insider trading, the abnormal return will be, at least partly, absorbed prior to the merger announcement and therefore, the abnormal return will be expected to be lower than in the normal situation. The evidence of the empirical study of the U.K. has supported the theory with only one exception-the year 2009. The reason for this might be that in the year 2009, the effect of the economic crisis has been worse and the stock market was badly influenced by the crisis and performed abnormally. In addition of course, 2009 represents a small sample of firms, which may be impacted upon by other factors in their day zero returns. The empirical study of U.S. also supported the day 0 abnormal return hypothesis with one exception-the year 2006. In other years, the differences between the average day 0 abnormal returns of the absolute clean firm and those of the ultra-ultra-suspected firm are quite huge.

The empirical study of China, however, does not support the day 0 hypothesis, the reasons might be (i) because of the lack of data, the empirical study of China has asymmetric results (for some years, there are no absolute clean firms while for the others, there are no ultra-ultra-suspected firms) and therefore, the test is done for the full sample which may lead to some unexpected bias, (ii) because China is a very young market and the government has played an important part in regulating and guiding, and therefore, the day 0 hypothesis does not work well. Indeed it appears an odd market in other respects, not least the small price gains for any firm, clean or otherwise. Gains tend to be small per se relative to U.S and U.K firms, and delayed to day +1 and day +2. All this may characterise a young market, with relatively few participants and relatively slow information diffusion. It may also reflect culture differences, or differences in the nature of takeovers.

After utilizing the four filters to investigate the possible insider trading in the three countries, I found that with a sample of 87 U.K. firms in a five years' period from 2006 to 2010, 19.5% of the total firms are considered to be absolutely clean. They have passed all the four filters and are therefore been considered not to have done any insider trading. 11% of the total firms are considered to be obscure. These firms do not pass the first filter, however, I found public rumours or news of director's trading on shares before or after the problematic day(s), therefore, the abnormal spikes of these firms might be due to the public following the rumours. There is a possibility that the insiders choose to announce their information publicly after taking advantage of them and so as to cover up their insider trading activities. As a result, these firms are labelled as 'obscure' because isolating trading based on private information is difficult. 71% of the total firms are suspected to different levels depending on how many filters they pass. Among the 62 suspected firms 8 of which are considered to be ultra-ultra-suspected because they fail all the four filters. In a sample of 100 U.S. firms in a five years' period from 2006 to 2010, 32% are considered to be absolutely clean, 1 is considered to be obscure and 77% are suspected to different levels depending on how many filters they pass. Among the 67 suspected firms, 6 are labelled 'ultra-ultra-suspected firms' for they fail every filter of the four filters. To compare the results of the two countries, I found that there was much less public news released in the U.S than in the U.K and this might be reflective of a leakier system and in part more insider trading in the U.S. Further, for the results of the Granger

causality test, 27.6% of the U.K firms show evidence of Granger causality and 31% for the U.S. This supports Hillier and Marshall (2002) and Persons (1997) that the U.K Code requires much faster reporting of director's dealings. The directors must inform their company of the transaction as soon as possible and no later than the fifth business day after a transaction for their own account or on behalf of their spouses and children while in the U.S., insiders only have to report their holdings within the first ten days of the month following the month of the trade. This could explain why there were less instances of Granger causality in the U.K than in the U.S.

The empirical study of China gives a result that with a sample of 19 firms being investigated, 16% are considered to be absolutely clean and 82% are labelled to be suspected of different levels depending on how many filters they pass. Because China is a very young market, some of the news is not shared with the international databases such as Nexis. As a result, the public released rumours of M&A of China cannot be found and therefore, there are only three filters for China.

Similar to the works done by Keown and Pinkerton (1981), Jarrell and Poulsen (1989), Conrad and Niden (1993), Chae (2005) and Graham, Koski and Loewenstein (2006), I find pre-announcement run-ups of the U.K. target firms' daily trading volume (in this thesis, the abnormal trading volume is called the abnormal turnover (AT)). I find that the average AT of the U.K. target firms starts to rise several weeks or months prior to the merger announcement which is consistent with the previous scholars' results. With the U.S data, I find that the AT of the clean firms is much higher than that of the ultra-ultra-suspected firms. I also find that there are some run-ups of the AT of the clean firms before the merger announcement and some of which are very significant. This might be explained by the fact that it is more likely to see AT spikes with irregular trading in small sized firms. In addition, it might be easier to do inside trading with large firms as the purchase of shares is less noticeable. It is suggestive that the future studies can take the firm size into account.

Section 8.2 Policy Implications and Future Research

In concluding this thesis, I also look at the implications of the results. This is a difficult task because establishing a link between research and policy initiatives is not

always straightforward. However, I believe that the implications of the results warrant some detailed consideration by the policy-makers.

The analysed AR, CAAR and AT pattern provide a base for the argument that stock price run-ups before merger announcement reflect widespread possible insider trading. Apart from this, I also consider the possible influence of the publicly released news and the change of the day 0 average abnormal return with the involvement of insider trading. The four filters developed in this thesis can be applied by the policy-makers in helping to investigate insider trading and then verify the results by the day 0 hypothesis. The four filters approach is so far a thorough investigation of illegal informed trading but not too time-consuming as a group of three or four researchers can do the job in at most three months for a whole year's M&A firms from collecting data to the final results. Indeed it is possible the process could be partly automated. Moreover, the cost of the resources is low-the data can be collected using Datastream and Nexis and the analysis can be done using either STATA or E-views. Moreover, the knowledge that this type of analysis is being done should in itself be a deterrent to insider trading.

This study can also be extended to insider trading investigation under other events. (e.g. the stock split, the dividend announcement, the earnings announcement etc.) Also, for the future studies, the application of the four filters on the bidders could be done. Moreover, another issues that this work raises for the future research are firstly the AT pattern before the public released news and secondly, the group analysis of firms with different sizes. In other words, to develop five or six filters in addition to the four filters approach to distinguish the AT pattern caused by the public released news, by the size of the firm and the true insider trading activities. Another concern raised by this work is that with the existence of insider trading, who gains and who losses? The gainers are obvious. For the losers, those who hold shares throughout the entire run up will not lose. Instead the gains will be on both day 0 and earlier. Those who sell their shares to the insider trader are definitely possible losers. Also those who buy shares after the insider trading spikes and before day 0 are potential losers, but it depends on whether they would have bought the shares anyway or whether they did so after being alerted by the insider trading spikes. It is complex because the existence of insider trading would have changed the whole dynamics of trading in that

share as people respond to the inside trading spike. But it is clear that if there are winners, then there must be losers.

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